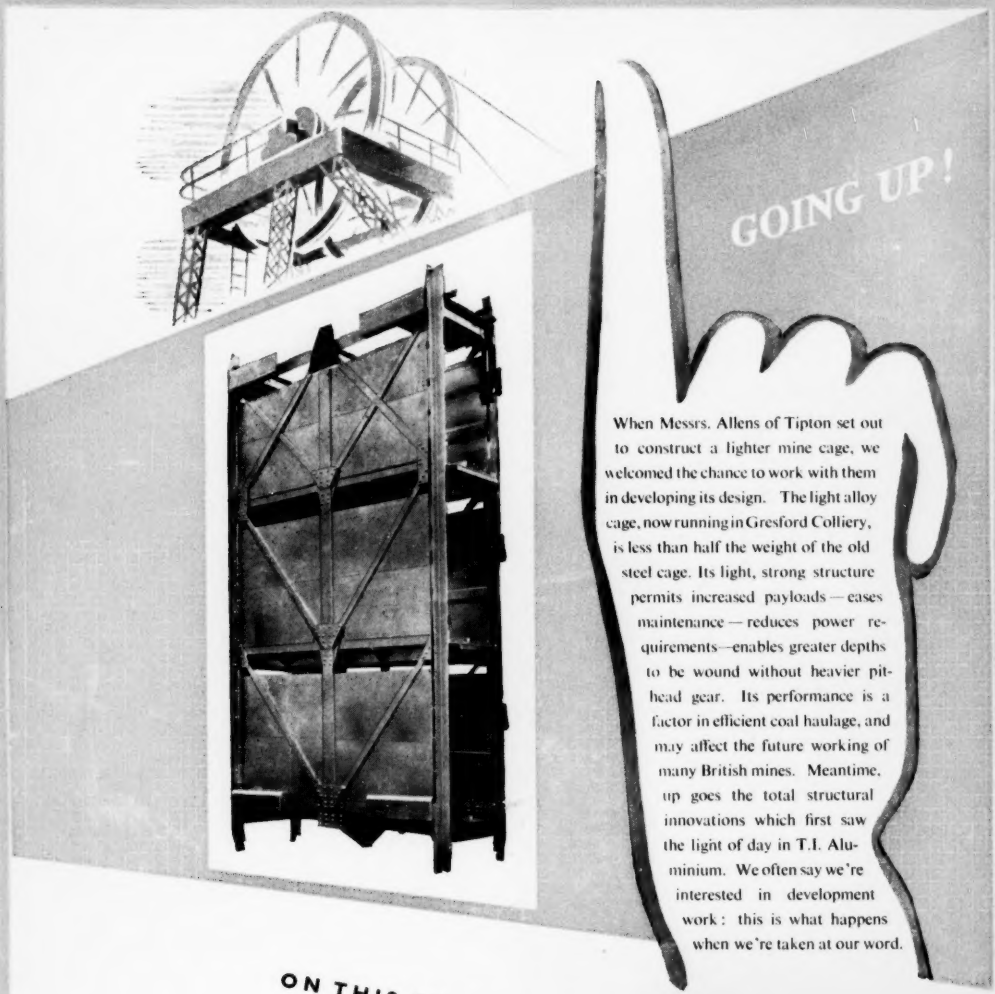
The Mining Journal

Established 1835 — Railway & Commercial Gazette

Vol. CCXXXIX No. 6106 — LONDON, SEPTEMBER 12, 1952 — PRICE 8d



When Messrs. Allens of Tipton set out to construct a lighter mine cage, we welcomed the chance to work with them in developing its design. The light alloy cage, now running in Gresford Colliery, is less than half the weight of the old steel cage. Its light, strong structure permits increased payloads — eases maintenance — reduces power requirements — enables greater depths to be wound without heavier pithead gear. Its performance is a factor in efficient coal haulage, and may affect the future working of many British mines. Meantime, up goes the total structural innovations which first saw the light of day in T.I. Aluminium. We often say we're interested in development work: this is what happens when we're taken at our word.

ON THIS KIND OF JOB...

PUT Aluminium FIRST

AND TI IN FRONT OF IT

T.I. ALUMINIUM LTD., TYSELEY, BIRMINGHAM. Tel.: ACOCKS GREEN 3333.

ALUMINIUM AND ALUMINIUM ALLOY INGOT, SLABS, BILLETS, SHEET, STRIP, TUBES AND EXTRUSIONS TO ALL COMMERCIAL, A.I.D. AND LLOYD'S SPECIFICATIONS.

A TI COMPANY

Triefus
DIAMOND DRILL BITS

* Full range of specified matrices

† Effective sludge clearance

* The range of matrices available is codified in terms of hardness and resistance to abrasion.

† The diamond pattern ensures that the sludge is cleanly removed from the working face of the bit.

TRIEFUS & CO. LTD. (WORKS) BELSIZE LANE, LONDON, N.W.3

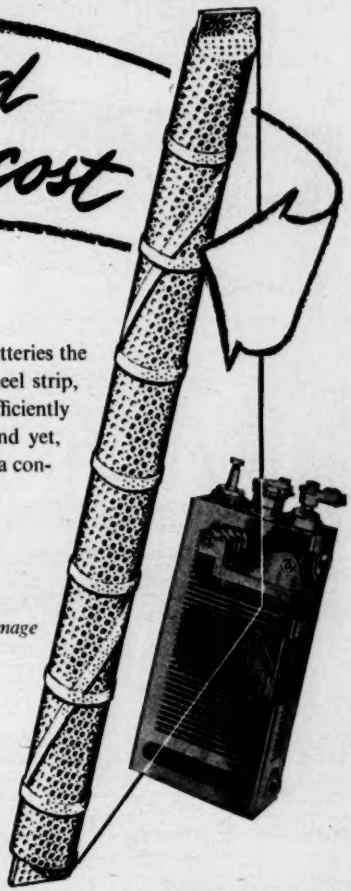
Telephone : Primrose 3368 Telegrams and Cables : Resets, London

WINGS DAY
SEPT 30th
Give for those who Gave

Britannia

TUBULAR ALKALINE BATTERIES FOR ELECTRIC LOCOS

Long life and low maintenance cost



IN these remarkable batteries the active material is contained within a tube made of nickel-plated steel strip, spirally wound, and reinforced by seamless steel rings. This tube is sufficiently flexible to accommodate itself to the expansion of the material and yet, being a closed tube, retains the material when it contracts. Result: a considerably increased working life for the battery.

SIX OTHER IMPORTANT ADVANTAGES

1 *Very light in weight, and occupies small space*
2 *Steel construction renders it immune from vibration effects*
3 *It may be left standing in any state of charge or discharge without damage*
4 *It takes the heaviest overloads without damage*
5 *Simple and inexpensive maintenance*
6 *Exceptional mechanical strength*

WHEN YOU REPLACE

Replace with Britannia—and make a definite saving in running costs. Our engineers are always ready to call and advise on your battery requirements. Perhaps you need new batteries *now?*

A.103

Britannia **STEEL ALKALINE BATTERIES**

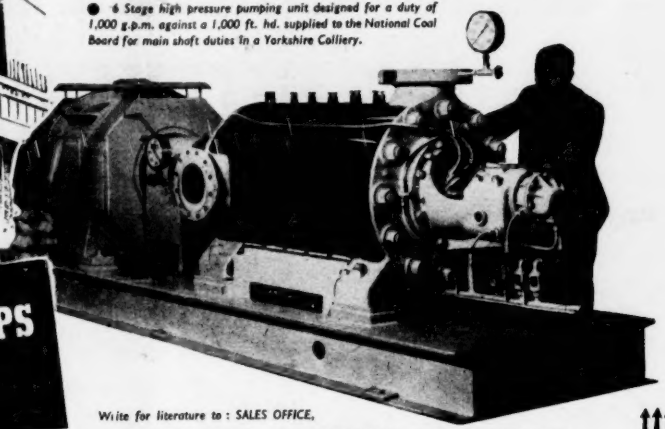
BRITANNIA BATTERIES LIMITED · 53 VICTORIA STREET · LONDON · SW1 · TELEPHONE: ABBEY 6168-9

On service under ALL conditions

SIGMUND supplies pumping equipment for all applications including high pressure sets for main shaft work, low and medium lift units for in-bye relay and boosting duties and coal washing pumps incorporating open impellers and renewable wear plates.

Sigmund pumps have a world-wide reputation for service under the best—and under the worst conditions!

● *6 Stage high pressure pumping unit designed for a duty of 1,000 g.p.m. against a 1,000 ft. hd. supplied to the National Coal Board for main shaft duties in a Yorkshire Colliery.*



SIGMUND PUMPS for Mines

Write for literature to : SALES OFFICE,

SIGMUND PUMPS LIMITED

Terminal House, Grosvenor Gardens, London, S.W.1. *Factories : Gateshead on Tyne*

Premier

PLANT AND HIRE CO., LTD

48, BURLINGTON ROAD, ISLEWORTH, MIDDLESEX

TRACTORS

D.2 Caterpillar Tractors, Model 3J. Several machines in unused condition and reconditioned before delivery.

Aveling-Barford Calf dozer Model CD.2. Completely reconditioned. Driven by Hopper cooled petrol engine.

T.D.9 International with Ruston-Bucyrus Hydraulic Angle-dozer. Completely reconditioned.

PNEUMATIC TOOLS

C.P.4 high lift sump pumps with delivery hose.
Pile driver attachments for Ingersoll-Rand breakers.
Rock drills by Climax, Holman & Consolidated.
Boyer Longstroke rivet hammers and C.P. metal drills.
Breaker steels and air hoses.

FIRE!

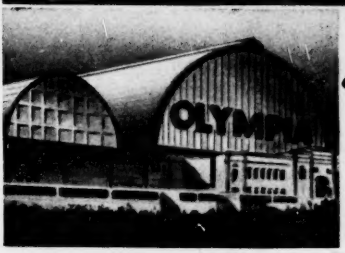
WHICH COLOUR

NU-SWIFT?

Red, blue or black ? Distinctive colours for different fire risks prevent costly errors. Are your extinguishers the right colours ? Write, or phone Elland 2852, for free advice.

NU-SWIFT LTD. • ELLAND • YORKS

In Every Ship of the Royal Navy



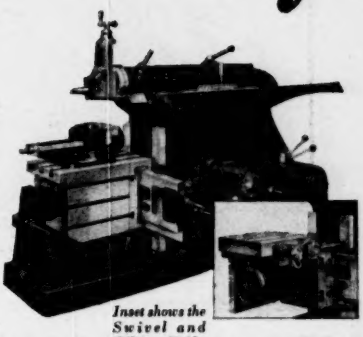
...“a Show in itself”

WE CORDIALLY INVITE ALL OUR FRIENDS BOTH FROM HOME AND OVERSEAS TO COME AND SEE US AT

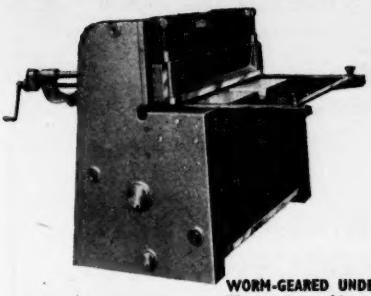
STAND 75A
GRAND HALL
OLYMPIA

International Machine Tool Exhibition

Sept. 17th-Oct. 4th 1952



Inset shows the Swivel and Tilting Table.

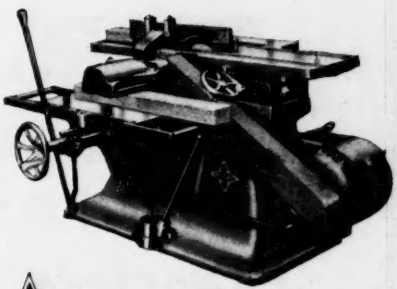


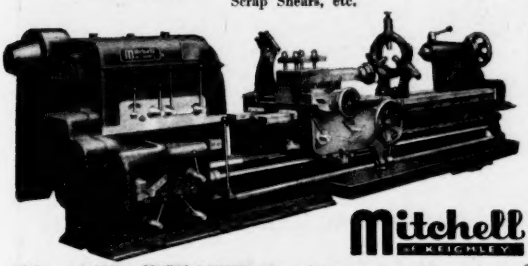
RUSHWORTH of SOWERBY BRIDGE

WORM-GEARED UNDERCRANK GUILLOTINE These new machines have capacities 4ft. x ¼in., 6ft. x ¼in., 8ft. x ¼in. in mild steel. Also Overcrank Guillotines 4ft. x ¼in. to 8ft. x ¼in. mild steel; Plate Bending Rolls, Press Brakes, Punching and Shearing Machines, Scrap Shears, etc.

Cranor of HALIFAX

MAJOR 26in. SHAPING MACHINE Has not been built to compete with low cost machines, but to suit the customer who insists on a top class product. Capable of heavy cutting and accurate work. Ask for brochures describing 20in., 26in. and 36in. sizes.





Mitchell of KEIGHLEY

14¼in. and 16¼in. CENTRE LATHES These lathes are capable of a wide diversity of work and possess three important characteristics—robust construction, wide and deep gap and large hollow spindle. We shall be happy to forward fully descriptive literature on request, as well as catalogue matter on the smaller models.

MIDSAW BIRMINGHAM

THE UNIVERSAL WOODWORKING MACHINE Performs with top efficiency plus maximum safety, most of the operations required in an ordinary woodworking shop. The demand for this machine is quite phenomenal.

MORRISON, MARSHALL & HILL LTD. 44/45, TOWER HILL, LONDON, E.C.3

Tel: Royal 1461-2-3-4. *Grams:* Morimil, Ald, London. *Cables:* Morimil, London. *Codes:* A.B.C. 5th Ed: Bentley's Complete Phrase, Bentley's 2nd Phrase

ORES
METALS
FERRO-ALLOYS

MANGANESE
CHROME
TUNGSTEN
ANTIMONY
TANTALITE
COLUMBITE
ZINC
LEAD
COPPER

Phibro

Philipp Brothers, Inc.

70 PINE STREET · NEW YORK 5, N. Y.

Offices: **AMSTERDAM · BUENOS AIRES · CALCUTTA · LA PAZ · MONTREAL · LIMA · TOKYO**

WOLVERHAMPTON DIAMOND DIE & TOOL Co. Ltd.

BOARTS
and
INDUSTRIAL DIAMONDS
Exporters

11 HATTON GARDEN, LONDON, E.C.1

Telephone: **HOLborn 3017** *Cables:* **Pardimon, London**

THE STANDARD BANK OF SOUTH AFRICA LIMITED

Bankers in South Africa to the United Kingdom Government. Bankers to the Governments of Southern Rhodesia, Northern Rhodesia, Nyasaland and Tanganyika.

CAPITAL AUTHORISED	£15,000,000
CAPITAL SUBSCRIBED	£10,000,000
CAPITAL PAID UP	£5,000,000
RESERVE FUND	£5,000,000

10, CLEMENTS LANE, LOMBARD STREET,
and
77, KING WILLIAM ST., LONDON, E.C.

London Wall Branch: 63, London Wall, E.C.2.
West End Branch: 9, Northumberland Avenue, W.C.2.
New York Agency: 67, Wall Street.
Hamburg Agency: Speersort, 6

BRANCHES THROUGHOUT THE UNION OF SOUTH AFRICA, SOUTH WEST AFRICA, SOUTHERN AND NORTHERN RHODESIA, NYASALAND, KENYA, UGANDA, TANGANYIKA, ZANZIBAR AND PORTUGUESE EAST AFRICA

'NOBEL-GLASGOW' Explosives and Accessories

There is a 'Nobel-Glasgow' explosive for every blasting operation.

Users are invited to apply to the Nobel Division of Imperial Chemical Industries Limited for assistance with their problems.

IMPERIAL CHEMICAL INDUSTRIES LIMITED
NOBEL DIVISION, 25 BOTHWELL STREET, GLASGOW, C.2

ICI

N.4.

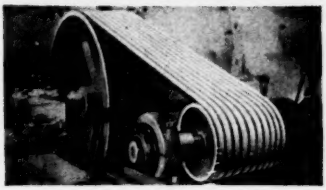
Here is an exceptional opportunity for you to inspect and compare the finest machine tools and allied products from the leading manufacturing countries of the world.

INTERNATIONAL MACHINE TOOL EXHIBITION 1952

OLYMPIA • LONDON
SEPT 17 - OCT 4
9.30 a.m. - 6 p.m. Admission 3/6
Open daily, except Sundays

The extensive range of exhibits will include:
MACHINE TOOLS · ENGINEERS' SMALL TOOLS · GAUGES
MEASURING EQUIPMENT · TESTING EQUIPMENT
PRESSES AND POWER HAMMERS · HEAT TREATMENT PLANT
WOODWORKING MACHINERY.
Make sure that you visit this outstanding event!

Organised by The Machine Tool Trades Association
Victoria House, Southampton Row, London, W.C.1



For all types of
Mining Machinery
specify:—

WIGGLESWORTH
short centre
"TEXROPE" V-DRIVES

FRANK WIGGLESWORTH & CO. LTD
ENGINEERS
SHIPLEY YORKS
'Phone: SHIPLEY 53141 Grams: CLUTCH, SHIPLEY

GRAPHITE
for all purposes
NATURAL · SYNTHETIC
FLAKES · POWDER
CARBON CONTENT UP TO 99·9%

ALUMINOUS OXIDE
SILICON CARBIDE
BORON CARBIDE

MICA

LAVINO (LONDON) LTD
103 KINGSWAY, LONDON, W.C.2
Tel: CHANCERY 6137 (3 LINES)

Pit Trams to Specification

★ **Collieries, mines, quarries and other industries will find that WARDS offer a dependable service in the production of pit trams and similar rolling stock to users' specifications.**

OTHER COLLIERY SUPPLIES INCLUDE:

Main Line wagon materials such as draw-bars, inter-bars, brake-guides, push-rods, strap-bolts, oxygen carriers, platelayers' bogies, platelayers' boxes and tools, platelayers' cabins. Narrow gauge track for underground colliery service.

ANOTHER ASPECT OF TWW SERVICE

THOS W. WARD LTD

ALBION WORKS · SHEFFIELD

TELEPHONE: 26311 (22 Lines) • TELEGRAMS "FORWARD, SHEFFIELD"

LONDON OFFICE: BRETTENHAM HOUSE · LANCASTER PLACE · STRAND · W.C.2

PT/1

Bank of British West Africa Limited

Established 1894

AUTHORISED CAPITAL £4,000,000
SUBSCRIBED CAPITAL £3,000,000
PAID UP CAPITAL - £1,200,000
RESERVE FUND - - £1,050,000

BANKERS TO THE GOVERNMENTS OF THE COLONIES OF THE GAMBIA, SIERRA LEONE, GOLD COAST AND NIGERIA
The Rt. Hon. LORD HARLECH, K.G., G.C.M.G., Chairman

Head Office:
37 GRACECHURCH STREET, LONDON, E.C.3

General Manager: F. G. WRIGHT
Secretary: S. J. ANDREWS

LIVERPOOL, 25, Water Street
MANCHESTER, 106-108, Portland Street
HAMBURG, Schauenburgerstr 49

GAMBIA - -	Bathurst	
SIERRA LEONE -	Freetown Bo	
GOLD COAST & ASHANTI -	Accra Cape Coast Dunkwa Koforidua Kumasi Oda Sekondi	Swedru Takoradi—Harbour Takoradi—(Market Circle) Tamale Tarkwa Winneba
CAMEROONS -	Duala	
NIGERIA - -	Abeokuta Benin Calabar Enugu Gusau Ibadan Jos Kaduna Kano	Kano—Airport Lagos—Marina Lagos—Broad St. Maiduguri Onitsha Oshogbo Port Harcourt Sapele Zaria
MOROCCO -	Tangier	

Agents in New York: THE STANDARD BANK OF SOUTH AFRICA LTD.
Every description of banking business undertaken
The Bank provides exceptional facilities for financing trade with West Africa
Principal Shareholders:
LLOYDS BANK LTD. NATIONAL PROVINCIAL BANK LTD.
THE STANDARD BANK OF SOUTH AFRICA LTD. WESTMINSTER BANK LTD.

LONDON & SCANDINAVIAN METALLURGICAL CO LIMITED

39 HILL ROAD, LONDON, S.W.19

Telephone: WIMbledon 6321 Telegrams: Metallurg, London

Manufacturing Metallurgists

Buyers for consumption in own and associated works in U.K. and abroad

of

ORES AND RESIDUES

containing

WOLFRAM MOLYBDENUM VANADIUM

CHROME MANGANESE

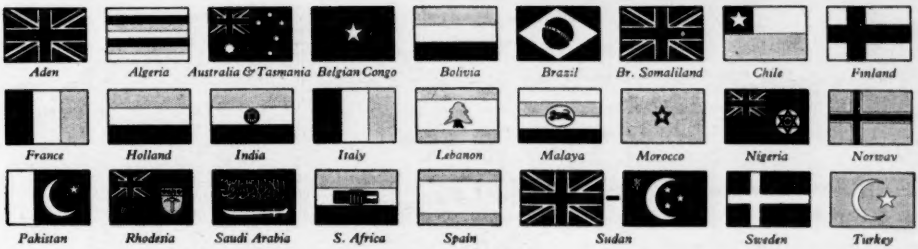
COLUMBIUM TANTALUM TITANIUM

Challenger News No. 3

The Challenger 3

diesel crawler

is already at work in Britain and the following countries overseas



DESIGNED AND BUILT ENTIRELY IN BRITAIN, the Fowler Challenger 3 Diesel Crawler is capable of giving drawbar pulls of up to 21,100 pounds. It is the first one of a series of Fowler Crawlers that will eventually cover requirements in Drawbar H.P. Classes I to IV. It can be supplied with or without equipment.

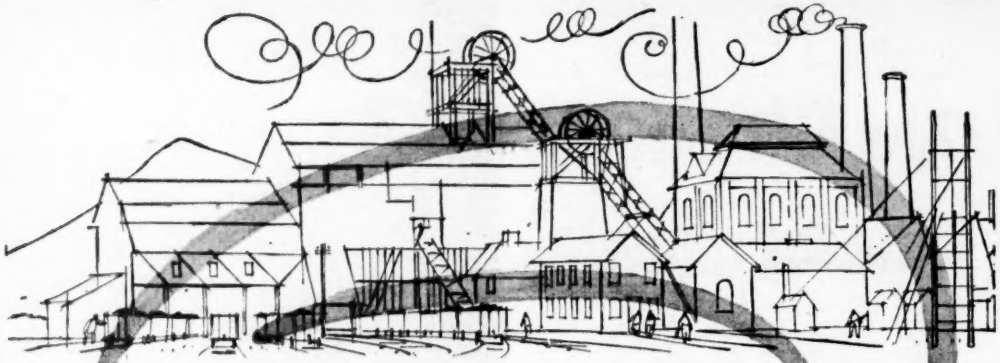
AFTER-SALES SERVICE
Wherever a machine is sold — no matter how remote the locality — spares and service are readily available.

FOWLER LEEDS

BRITISH DIESEL CRAWLERS

Products of the* MARSHALL ORGANISATION *Gainsborough, England

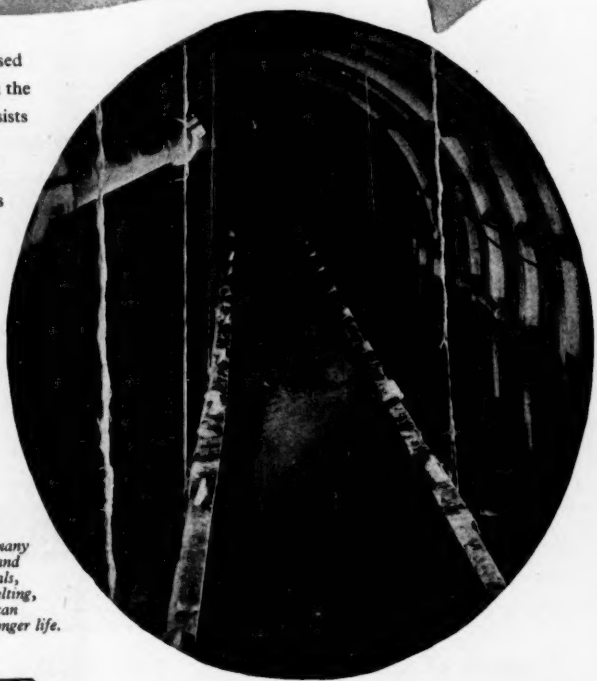
***Sole Concessionaires for Great Britain* Thos. W. WARD LTD., Albion Works, Sheffield, 4**



more safety in the mines with SCANDURA

The original P.V.C. Belting

B.B.A's Scandura Conveyor Belting means increased safety in the coal-mines, where many fires start in the underground conveyor system. Scandura consists of a solid woven fabric, impregnated and coated with P.V.C. (poly-vinyl-chloride). B.B.A. were the originators of this type of belting and research has proved that Scandura is highly fire-resistant — unlike the normal type of conveyor belting, which can easily be ignited by friction. The first lengths of Scandura were delivered to Manvers Main Colliery, S. Yorkshire in March 1948. Since then the advantages of Scandura coal conveyor belts have been generally recognised.
Supplies of Scandura are available now!



Scandura Coal Conveyor Belting has been allocated N.C.B. "Fireproof" Approval No. 1.

In addition to its fire-resistance, Scandura Belting has many other qualities especially valuable in coal-mines. Tough and flexible, it withstands moisture and most oils and chemicals, holds belt fasteners more firmly than the usual type of belting, stands up to abrasion and the accidental damage which can strip or tear a conveyor-belt surface—and has a much longer life.

MANUFACTURED BY **BBA** BRITISH BELTING & ASBESTOS LIMITED, CLECKHEATON, YORKS

The Mining Journal
Established 1835

Vol. CCXXXIX No. 6108 LONDON, SEPTEMBER 12, 1952 Price 8d

CONTENTS

Notes and Comments 279
From Our Own Correspondent 280
Brazil; Western United States.
Mining in Thailand 282
Zinc—Effect of Price on Substitution 283
Wagon and Locomotive Utilization 284
A New Ventilation System in the Orange Free State ... 286
Machinery and Equipment 287
Units of Magnetic Equipment; A Range of Ore Feeders; A Drill Rig on Tractor; Non-Flameproof Underground Lighting Equipment.
Metals, Minerals and Alloys 288
The Mining Markets 290
Company News and Views 291
Powell Duffryn's Good Trading Profits; Climax Rock Drill's Bigger Turnover; Halkyn United to Repay 3s. per 5s. Unit; Wankie Fuel Sales Top 2,500,000 tons; New Broken Hill Starts Up Its Own Mill; F. S. Geduld Share Issue Successful; Rand and O.F.S. Mine Returns for August.
Company Meetings 292
Western Mining Corporation; Gold Mines of Kalgoorlie (Aust.); Kaduna Prospectors; Kaduna Syndicate.

Published by The Mining Journal Ltd. at 15, George Street, London, E.C.4. *Subscription £2 per annum (post free)*

NOTES AND COMMENTS

"Boosting" Australia's Northern Territory

Mining in the Northern territory continues to attract Press attention, rather than the solid progress of the old, established mining companies in other parts of Australia.

At the present time, writes our Australian Correspondent, there is a "boom" in Northern Territory mining development, largely on paper; fostered by the world-importance of uranium which prompts columns in the Press following the occasional prospectors' discoveries of prospects in the Territory. These reports have been naturally supplemented by published statements by visitors with little, if any, mining knowledge of the mineral riches of the area, to the effect that these resources have been only scratched, and that there is a great mineral future immediately ahead. All these enthusiastic statements must be accepted with great caution; the authors of them ignore, even if they are actually aware of the fact, that in the early years of the region, a surprisingly large amount of mineral exploration, prospecting and mining, to relatively shallow depths, was carried out by individuals and now dead and gone companies.

Many of the old worked mineral occurrences have been examined by Government geological and geophysical parties whose reports have been, in general, disappointing.

At the present time, uranium is prominent, but despite the recent brief boom, Rum Jungle is the only area that is of potential importance, but on which much work has yet to be done to prove its economic value. Other discoveries lie by the wayside. The recent find at Edith River is as yet in the earliest prospecting stage but has received marked publicity out of all proportion with facts so far disclosed. Wolfram and copper have achieved similar prominence.

It is not to be inferred that mineral deposits of importance may not be located and become good producers under efficient control, but the majority of gold, lead, wolfram, tin and copper occurrences now being worked are essentially working party propositions rather than ventures that might be successfully undertaken by companies. This is particularly true of most of the wolfram mines being opened up by recently floated, or recently revived companies; some may make good, if not over-capitalized, but most, although containing rich ore, have little hope of returning capital and interest to the shareholders.

Tin has attracted far less public notice, but there is one tin field, Maranboy, that has always warranted much more attention than it has received. At the moment, a Southern company is carrying on development, and it is reported that the Broken Hill Proprietary Co. has taken up leases in the vicinity. Copper is prominent because of the discovery of a high grade copper lode in the Peko gold mine, at Tennant Creek. Present price and grade allow the ore to be shipped to smelters at Port Kembla, New South Wales, but so far, there is too little coherent information to permit possibilities to be assessed much beyond the faces. Hitherto, territory copper deposits have been of little importance. Home of Bullion, at Barrow Creek, produced high grade ore in some quantity, to a depth of 300 ft. from a large ore body, but after some two years' activity, an ensuing silence gives a strong suspicion that the primary sulphide zone has been found to be too low in grade to be payable.

The other region that has drawn attention is Jervois Range, east of Alice Springs, but development of the occurrences there has shown them to be in the nature of small shoots of copper and lead ore, and generally unattractive for investment of capital. There is agitation for a copper smelter in the Territory, but its consideration calls for very careful summing up of the prospects of the very few deposits that give any prospect of tonnage, and in addition, transport is a strong influencing factor. Prospects for the Northern Territory as a copper producer of any importance are doubtful. Mica deposits at Hart's Range and Plenty River, east of Alice Springs, are important but under prevailing conditions, are not profitable to other than individual workers, mainly Italians, despite the high quality and yield of the mica. Improvement in production is possible from properly directed company operation an enterprise that is unattractive to capital.

The Zinc Picture

The instalment of the Paley Report appearing in another column of this issue is notable chiefly for the contrasting conclusion offered between the future of zinc and lead. As zinc ores exceed lead ores in frequency of occurrence, richness and size of deposits, opinion among geologists and mining engineers is that the physical basis for a greatly expanded zinc supply is favourable, whereas it is questionable if more than a modest expansion can be secured in lead. Zinc supplies should be adequate to meet the greater demand with little or no increase in costs. Moreover, the national stockpile is ample to close any scarcity gap between need and supply, and potential reliance on the stockpile may decline in the next few years as large scale substitution and technological development proceeds; the substitution of steel for brass for shell cases is a case in point.

After the next decade, however, the stockpile objective may have to be raised. Though the use of zinc base alloys has increased more than ten-fold in a generation it is thought that potential new uses of such alloys has been substantially exhausted. Zinc can be replaced by magnesium in dry cells and in cathodic protection; for die-casting and galvanizing it seems to be threatened by aluminium, the price of which is now competitive, with the light metal having the advantage in lightness and strength.

O.F.S. Uranium Producers

The statement by Mr. Viljoen, South African Minister of Mines, that the production of uranium could become an asset nearly as valuable as the gold industry itself was taken at the time with a good deal of caution, but the substance of the statement indicated that more South African gold producers would have to join the ranks of those producing the metal. Eight additions have now been made to that list. Five of the companies are in the Anglo American Corporation group: they are Free State Geduld, President Brand, President Steyn, Welkom and Western Holdings. The other three companies are Luipaards Vlei, Randfontein Estates and Virginia O.F.S. In accordance with the previous policy no details of output or price are given, and on this occasion no indication has been made of the profits which the companies can expect to receive for the work they do. The five Anglo American companies are proposing to send their residues to one of two leaching plants which are to be erected in the Welkom area of the O.F.S. If this proposal is implemented, the production of uranium in the O.F.S., now announced for the first time, will be on a very efficient basis.

Final Report of the Anglo-American Council

The formation of a continuing organization is now under consideration in the United States to carry on the invaluable work of the Anglo-American Council on Productivity which was wound up in May last. This is announced in the final report of the Anglo-American Council on Productivity published at the beginning of this week, which also states that until the British Productivity Council can take over the work on this side of the Atlantic, the U.K. section of the Council will be kept alive to pursue what has been achieved by the Joint Council since its formation three-and-a-half years ago.

The belief expressed in the final report concerning the work of the Council is that one of the most important benefits lies in the improvement of the climate of opinion about productivity. But it is asserted that a change of such a nature is incapable of short-term accomplishment and that the full harvest of the programme is still to be gathered.

Brazil

(*From Our Own Correspondent*)

Teresopolis, August 25

Brazilian production of basic minerals continued to expand last year. The output of pig-iron, steel ingots and rolled-steel products rose to 772,023, 841,780 and 702,418 tonnes, respectively, that of cement and crude petroleum to 1,440,842 tonnes and 109,835,000 litres. Production of coal dropped 33,514 tonnes to 1,949,549 tonnes.

The National Steelworks at Volta Redonda aims at producing 360,000 tonnes of rolled products this year, or 18,000 more than in 1951. By June 30 last the output of rails and accessories had reached 34,214 tonnes; rods and rounds, 31,280; heavy sheet, 25,518; hot and cold rolled flat steel, 65,914; galvanized sheet, 6,024; tinplate, 21,143. A new unit to manufacture metallic structures for construction work is to be installed as part of Volta Redonda's expansion programme. It should begin operating in 1953 with an initial output of 1,000 tonnes monthly. Volta Redonda's prices were increased 15 per cent this year to cover the rising cost of raw materials. With the exception of steel rails all products are now higher-priced than the imported articles.

Shipments of iron ore through the port of Victoria, from the ex-British Itabira mines, reached the record figure of 151,789 tonnes in July, bringing the total for seven months to 772,342. The Companhia Vale do Rio Doce, which exploits the mines and the Victoria-Minas Railway, made a profit of £1,400,000 in 1951 and declared a dividend of 6 per cent on preference shares. The first stage of the programme to improve mines, railroad and port is nearing completion and will raise export capacity to 1,500,000 tonnes annually without increasing the total investment, which amounts to £30,400,000. The next stage, to double capacity, will call for a loan of $U.S.5,000,000. Without a loan the company will need six years for its programme.

DETAILS OF EXPORTS AND IMPORTS

In spite of expanding local production mineral imports showed the following increases during the first quarter of 1952, when compared with the corresponding period of 1951: mineral raw materials, 154,469 tonnes to 1,928,322; iron and steel, 19,295 tonnes, to 32,817; petroleum products, 114,676 tonnes, to 1,233,906; iron and steel manufactures, 6,699 tonnes, to 81,988.

The average price of wolfram, f.o.b. Brazil, jumped from £489 4s. 9d. per tonne in 1950 to £1,720 3s. 7d. in 1951, but dropped to £1,300 this year when the demand from abroad ceased. The export price of scheelite, which appears this year for the first time in Brazil's foreign trade returns, averaged £1,796 18s. per tonne for 555 tonnes shipped to April 30. American importers paid $U.S.7.81 for Itabira iron ore in 1950, $U.S.10.91 in 1951 and pay $U.S.15.69 now.

The Brazilian Government will allow 4,000 tonnes of beryllium ore to be exported in 1952, at a minimum price of 919 cruzeiros (£18 7s. 7d.) per unit of tenor contained in the shipment; 90 per cent of the value must be paid against shipping documents. Any difference between the Brazilian analysis and that made at destination will be adjusted when the final payment is made. Exports were restricted to 1,500 tonnes last year in order to accumulate stocks in Brazil.

CHROMITE DEPOSITS

The Department of Mineral Production reports that analyses of samples from the chromite deposits, recently discovered in the Rio Preto district of the Amapá Territory, showed between 50.6 and 56.4 per cent of chromium.

Western United States

(From Our Own Correspondent)

Portland, Oreg., September 4

The steel strike, which had run over a period of seven weeks, was finally settled on July 24. Tin and zinc were the only non-ferrous metals seriously affected but there is no estimate as to just what extent.

Prices of lead and zinc having remained for two calendar months below the minimum figures set in the Act which removed the duty on these metals last February, President Truman has signed orders restoring the duty. The Act made no provision for further removal in the event of price recovery and in such a case another Act of Congress would be required.

The copper situation continues confusing. The Government stands firm in its refusal to increase the ceiling price above the present 24½c. whereas foreign producers are permitted to charge whatever they can get, currently as high as 36½c. Furthermore an order requires fabricators to fill at least 40 per cent of their requirements by the purchase of foreign copper, which creates an anomalous and wholly unjust situation. Some of the large producers own their own fabricating companies which, however, operate as separate entities. Under the order a producer can sell its own fabricating company only 60 per cent of its needs and the latter must import the remainder at a higher price although the parent company is able and willing to supply the full amount at the domestic price. On the basis of a domestic price of 24½c. and a foreign price of 36½c. the fabricator pays an average price of 29.3c. To assuage this situation somewhat the fabricator is allowed to increase his price to the extent of 80 per cent of the increase in cost of his copper but this increase is not figured on the domestic price of 24½c. but on 27½c., the figure set on Chilean copper in the 1951 agreement, which domestic producers were never allowed to charge. To complicate the situation further Mine, Mill and Smelter Workers' Union and C.I.O. are formulating a demand on the copper industry for a wage increase of 25c. an hour plus other benefits. Should these be granted, even in part, either before or after a strike it would inevitably result in a demand by the industry for an increase in the ceiling price. That the plight of many companies in attempting to operate under present conditions is recognized is evidenced by a contract recently made between D.M.P.A. and Howe-Sound Co. This provides that D.M.P.A. will purchase 9,000,000 lb. of copper (about a year's output) from Howe-Sound's Chelan mine at a premium of 4.7c. per lb. The contract is based on evidence that the mine can not be operated profitably under present conditions and prices.

Congress has passed a law which waives the statute of limitations with respect to damages claimed under Government Order L 208 (Gold Mine Closing Order of October 1942) and allows a period of one year from the effective date of the Act for the filing of such claims.

Gold miners are somewhat heartened that both political conventions this summer took note of the fact that a change in the attitude toward gold is called for, as particularly expressed in the platform of the Republican party which advocates an economy based on "a dollar on a fully convertible gold basis." However, the industry is not getting too excited over any campaign promises. Senator Knowland of California has called on the Treasury Department to furnish detailed information covering several points in the administration of the gold programme since the present law was enacted in 1933.

After 13 months of control N.P.A. has removed all restrictions on the use of copper and aluminium except for recreational, amusement and entertainment facilities.

ARIZONA

San Manuel Copper Co. finally has been granted a loan by R.F.C. of $94,000,000 for the development and equipment of its property. Application was for $110,000,000, the amount estimated as necessary to put this vast enterprise on full scale production, but R.F.C. reduced the amount by $16,000,000 and the difference will be financed by Magma Copper Co., which controls San Manuel and has already invested $10,000,000 in its development. This loan is the largest ever granted by R.F.C. but it is of interest to note that one of $60,000,000 has been made for the rehabilitation of the White Pine copper mine in the Michigan peninsula. San Manuel's programme is planned for completion in 1957 and is to effect an annual output of 140,000,000 lb. of copper and 6,000,000 lb. of molybdenum.

Phelps-Dodge Corporation has let a $900,000 contract for the concrete construction on its new mill at Bisbee. The 12,000 ton plant which will have an ultimate cost of $7,500,000 is being built to treat the ores of the Lavender pit, now under development. Production is scheduled for late in 1954.

CALIFORNIA

Bureau of Reclamation has reached an agreement with copper producers on the western shore of Shasta Lake. This artificial lake, formed by the construction of Shasta Dam, submerged highways and railroads thus making inaccessible many of the mines of the Shasta Copper Belt. It also submerged some of the smelters such as those of the Mountain Copper Co. and United States Smelting Co., although these have been closed for many years due to injunctions based on fume damage. Under the agreement the Bureau of Reclamation will purchase 2,600 acres of land from U.S. Smelting and build an eight-mile access road to reach the copper deposits. Two damage suits against the Government will be dismissed. Goldfields American Development Co., Ltd., operating as New Penn Mines, Inc., has acquired the Penn mine at Campo Seco in Calaveras County in the "Copper Belt" (distinct from the Shasta Copper Belt) a zone lying in the Sierra foothills and paralleling the Mother Lode on the west. The deposits have been worked since the 1860's and there has been a very considerable production from high grade copper ores but when these began to show a high zinc content many of them were forced to close. A recent typical assay from Penn shows 1.5 per cent copper, 7 per cent zinc and recoverable amounts of lead, gold and silver. With the advent of differential flotation such ores became valuable and the copper belt is experiencing something of a revival.

TEXAS

The expected shutdown of the Longhorn tin smelter at Texas City has been delayed due to arrangements for a supply of tin ore from Indonesia. The smelter has been operating largely on Bolivian ore and concentrates but due to the political upheaval in that country contracts have not been renewed and with no supply in sight a shutdown appeared inevitable. It is expected that the Indonesian arrangement will permit operation for at least a few months but not at full capacity.

UTAH

Kennecott Copper Corporation has received Government approval for the remodelling of the Magna and Arthur mills of the Utah Copper Division at Garfield. The programme will involve an expenditure of $3,300,000.

Mining in Thailand

The following article presents the current production figures for tin and wolfram, respectively the most important of Thailand's mineral deposits, and concludes by briefly outlining the other deposits of various minerals known to exist within the country.

Mining prospects in Thailand—better known to most of our readers as Siam—is the subject of a United States Geological Survey Bulletin entitled "Geologic Reconnaissance of the Mineral Deposits of Thailand," which has been prepared by a team of U.S. Geologists in co-operation with the Royal Thai Department of Mines. While the bulk of the report is concerned with the Geologic structure of the Kingdom more particularly Northern and Central Thailand, reserved areas which are not open to foreigners, the better known South Thailand areas were to use the phrase of the report "sampled."

THE LASTING IMPORTANCE OF TIN

A considerable amount of information of an economic character is embraced in the Bulletin. Thailand from the beginning of the 30's was the fourth largest tin producer in the world, the workings being concentrated mainly in a zone along the Burmese frontier and in the peninsular region of the south. For centuries Chinese migrants worked alluvials and many of them settled permanently in the country. The Portuguese negotiated trade treaties with Thailand as early as 1511 to 1516 and established a trading post in Puket—then known as Junkceylon—and the mines there were visited by an explorer, Linschotten, between 1583 and 1592. The Bulletin then skips history until 1906 when Capt. E. T. Miles installed a bucket dredge on the floor of Tonkah harbour in Puket island A few years previously, Colonel Foss had brought back reports to Great Britain of the importance of the Siamese tin deposits, but informed *The Mining Journal* that they contained a considerable amount of tungsten ore which he feared might militate against the economic working of much of the deposits; and this fact he desired should not be published. Subsequently other dredges were built by European and Chinese interests, and at the date of the Japanese invasion in 1941, 39 dredges were in operation. This big advance in tin mining in Thailand was due largely to the skill with which the Thai Government played on the weakness of the International Tin Committee in refusing to accept an output quota such as limited production of the chief world producers. The tin output expanded very rapidly and reached 17,116 tons in 1940. With the Japanese occupation, production fell off rapidly till in 1946 the total was only 1,056 tons of contained tin. With the end of the war, production started to improve once more, exports reaching 7,815 tons in 1949, 10,955 tons in 1950, 8,809 tons in 1951, and approximately 4,340 tons in the first half of 1952, to which the counties (*changwats*) of Puket, Renong, Takapa and Phangnga were the chief contributors, but the Yala district inland from Pattani returned only 390 tons as compared with 2,316 tons in 1941. By 1950, 32 dredges were again in service, the chief producers being Renong Consolidated Tin Dredging Co., Bangrin, the Siamese Tin Syndicate and Puket Tin Dredging Ltd. Besides dredges, Chinese interests operated 44 gravel pumps in 1949 responsible for about 22 per cent of the tin output. Lode mining is responsible for about 8 per cent of the tin output but the Pinyok mine in the Yala county had not been reopened in 1949 and is probably still dormant.

Next to tin, wolfram is the most important mineral produced in Thailand. Up to some ten years ago production was unimportant, starting with 90 tons of concentrates in 1935. In 1943 the high-water mark of 1,579 tons was reached—about what Kramat Pulai produced in the F.M.S. yearly before the deposit was exhausted. After that wolfram like tin declined rapidly, recovering in 1949 to 674 tons. As wolfram weathers rapidly in this climate, it is not found in streams at any distance from the point of origin. Tungsten deposits have been found over a wide stretch of the Kingdom, about half the output coming from the Peninsula "open" area, which is accessible by the Thai State Railway connecting with the line to Butterworth, and there is coastwise shipping betwen Puket and Penang. The two other chief producing areas are the Mae Saryang district, some 20 kilometres from the Burmese border, and 140 kilometres from Mawchi, which has become one of the country's principal producers. The district is still very inaccessible and the ore is carried by boat or pack animal including elephants. The other important district outside the Peninsula is that of Pilok in the Kanshanaburi *changwat*, on the east side of the coastal range in an inaccessible and heavily forested country. Current production is said to be between 300 and 400 tonnes a year. The two oldest mines have extended underground workings to a depth of 30 metres from the outcrop but most of the others recently opened are merely surface workings. The quartz veins may average 1 per cent WO_3, but the formation is pockety making reserve estimates difficult. Molybdenite, scheelite and beryl are minor ore constituents, but the scheelite is unimportant economically. The ore is sent through Bangkok to southern ports.

A CROSS SECTION OF DEPOSITS

Ilmenite occurs in beach deposits in many places along the south-eastern and Peninsular Thailand coast and tailing dumps (*amang*?) at tin washing sheds in the south contain 60-90 per cent of the mineral. Japan was a purchaser just before the outbreak of the war. Iron ores occur in many widely-distributed laterites and in several contact-metamorphic deposits. The largest known deposit is at Khao Thap Khwai estimated to contain 720,000 tonnes of 48/66 per cent iron. Antimony deposits are mined in the Lampang, Phrae, and Surat Thani *changwats*. In 1949, 457 tons of stibnite ores were mined and production can be increased. Copper occurrences are numerous, but none so far have seemed promising, though mineralized outcrops are so weathered or soil-mantled that detailed geological study is lacking. Gold-mining, more particularly panning by local natives, is widespread. The known lode-deposits are few, but a French company, the Sté. des Mines d'Or de Litcho operated from 1936 to 1940 and produced over 62,000 f.oz. The mine closed down when the high-grade ore was exhausted in 1940, since when no goldmining leases have been granted. Asbestos prospects are known in five localities, but offer little promise for large-scale development. Thailand produces sapphires, rubies, topaz and zircons. The deep red Thai rubies are said to command a high price. Petroleum with a napthalene base occurs in tar seeps and shallow wells in the Mae Fang basin and asphaltic sands from these are used for road surfacing. Heavy asphaltic crude has been pumped from a small well where the Royal Department of Mines has recently been doing some shallow drilling. Oil shale deposits exist in substantial quantities in the Mae Sot basin and deserve drilling, but they are at present rather inaccessible. The oil content is placed at 30/330 litres per tonne of shale. There are some other minerals but of no economic interest as yet.

THE PALEY REPORT—IV.

Zinc—Effect of Price on Substitution

The situation in zinc in the view of the compilers of the Paley report would appear considerably simpler than that of the other major metals. Summarized briefly, the situation is presented as follows: The demand for zinc in the United States can be expected to grow roughly two-fifths as fast as the total national output of goods and services. The actual figures of projected demand are as follows:

U.S. Zinc Demand—Current and Projected

	1950 (000's s.tons)	1975 s.tons)	*Percentage increase projected*
Galvanizing	434	651	50
Brass and bronze	211	264	25
Rolled zinc	68	51	—25
Die castings	281	351	25
Pigments	132	198	50
Other	30	60	100
Allowance for export of fabricated zinc	—	25	—
Total U.S. zinc consumption	1,156	1,600	38
Less scrap	—75	—100	—
Total demand for U.S. new zinc	1,081	1,500	39

Long-run domestic mine production, however, even under the stimulus of continued favourable prices and of measures to encourage exploration and production, cannot be expected to exceed 700,000 tons per year, which is little more than the current level of output. Consequently the United States demand for zinc imports can be expected to increase vigorously, possibly more than doubling by 1975 to 800,000 s.tons annually—as against 382,000 s.tons in 1950.

An increased demand in the rest of the free world as well as in the United States is foreseen in the following Free World consumption estimate:

Projected Primary Zinc Consumption in the Free World

	1950 (000's	1975 s.tons)	*Percentage increase*
United States	1,081	1,500	39
Canada	58	88	50
United Kingdom	265	344	30
Free Europe	534	764	43
Australia and New Zealand	57	100	76
Japan	57	117	106
Others	89	291	228
Total	2,142	3,205	49

Thus the larger United States demand for imports, plus increasing consumption outside the U.S., may require as much as a doubling of mine production in the other free countries. This position is summarized in the chart. The reserve prospects for such an increase are favourable, and it should be possible to meet increasing demands at or near present real costs provided political and economic circumstances also can be made favourable.

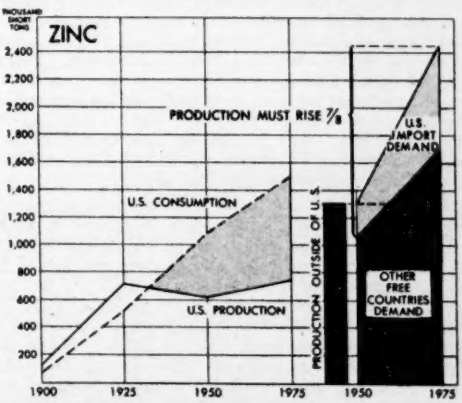
Zinc accordingly offers a particularly promising field of operation for the policies, of stimulating exploration and of helping provide favourable political and economic circumstances for production, both abroad and at home.

As regards substitution prospects, economic conditions will permit of a greater use of aluminium in products now using brass or zinc base alloys. A substantial portion of die-castings is now being made from aluminium base alloys and magnesium is also entering this field. Magnesium is also likely to substantially replace zinc in dry cells and engraving plates.

Thus extensive substitutions of other materials for zinc are now taking place, and additional substitutions of the same sort have been assumed in assessing the future. Should zinc production fail to meet the growing demand at real prices close to those of recent years, substitutions will be even more widespread.

ORE RESERVES

In the period from 1925 to 1950 there was a marked change in the pattern of U.S. domestic production state. Whereas the Tri-State district produced 59 per cent of the national output, in the earlier year it only accounted for 17 per cent at the end of the period. Future production will depend on about 10 major districts of roughly equal capacity. Domestic reserves in 1950 were estimated at around 16,000,000 s.tons of recoverable zinc, on a 77 per cent recovery basis, rather less than half of which were "measured" or "indicated"; a further 15,000,000 tons of metal might possibly exist which would become economic at prices above the post-Korean level. 16,000,000 s.tons would represent about 25 years' output. Recently, important additions to the ore reserves have been made in New York, Tennessee, Washington, and Idaho, and continued discovery in the future is anticipated by expert geological and engineering opinion. Improved recovery in treatment is anticipated; as about two-fifths of the present zinc-processing capacity is still using old techniques, with recoveries as low as 85 per cent compared with 92 to 96 per cent in more up-to-date plants. Slag fuming should improve zinc recoveries from the lead slags when the new slag fuming process is more extensively installed. At the present there are only four such plants in the U.S. The recovery of secondary zinc averaged about 69,000 s.tons yearly at the end of 1950 as against 80,000 s.tons at the beginning of the period. Allowing for the increasing relative importance of galvanizing and the increase in



This chart from the Paley Report emphasizes that, with only a very small increase in U.S. zinc production anticipated over the next 25 years, the increase of production from other Free World countries must be of the order of 85-90 per cent to meet the projected consumption of 3,200,000 s.tons

industrial production generally the estimate of recovery of scrap in 1975 is some 100,000 s.tons.

The U.S. Geological Survey has estimated "measured" and "indicated" reserves of zinc in the rest of the free world at around 35,000,000 tons of recoverable metal but the figures are considered incomplete and the true reserve figure must be considerably greater. Overseas sub-marginal resources are likely to be considerably larger in proportion to the known reserves of the U.S., as the current cut-off grade is generally higher.

The report says there are good reasons to be confident that the required expansion of some 100 per cent in mine output in non-U.S. countries can be secured. "Measured" and "indicated" reserves at Broken Hill include considerable tonnages of recently discovered reserves as yet undeveloped, and good expansion possibilities exist for established producers in Canada, Peru, the Congo, Italy, South-West Africa, and Japan. The world is witnessing at present a boom in the development of zinc mines. Among mines or districts likely to become important producers in future years are included Barvne (Canada), Matilde (Bolivia), Zellidja (French Morocco-Algeria) scheduled for +120,000 tons in 1954, Chilite (Peru), and deposits in Nigeria and Guatemala.

The following table shows the report's estimate of the world zinc ore reserves:

Free World Zinc Reserves
(000's *s.tons contained metal*)

Argentina	1,700	Nigeria	600
Australia	14,000	Peru	3,700
Belgian Congo	1,500	Spain	1,100
Bolivia	1,000	Sweden	1,100
Canada	8,200	United States	21,200
French Morocco	900	Others	4,000
Germany	5,000		
Japan	1,300	Total	65,000
Mexico	1,000		

To sum up the physical basis for a greatly expanded zinc supply is favourable, in contrast to lead where anything more than modest expansion is questionable.

Wagon and Locomotive Utilization

By A. G. THOMSON

The following article stresses the rôle which surface and underground transportation plays in the coal and iron mining industries in the United Kingdom, and points out that current examination of existing rail traffic systems completed by the British Iron and Steel Research Association and British Railways have shown that operational efficiency can be considerably increased. The author presents the several factors relevant to the obtaining of speedy and effortless transportation of mined materials and concludes by presenting the case for the possibilities of radio communication.

The capacity of a mine depends largely on the efficiency of the transport arrangements both on the surface and underground. Of considerable importance to the coal mining industry, therefore, are the studies of works traffic problems which are being made by the British Iron and Steel Research Association. The investigators are concerned essentially with the traffic of integrated iron and steel works, but the research programme has also included time studies of locomotives on iron ore mines. The work has been in progress for several years and has led to the development of practical methods for assessing the operating efficiencies of works transport systems. These methods are also applicable to the analysis of main line and inter-departmental traffic on coal mines.

The idea of building a works around a railway system has been generally accepted in the iron and steel industry, but in the older works the railway system grew with the plant and theory often lagged behind efficiency. During the war years attention was focused on the need for a rapid turn-round of wagons in order to keep materials flowing and production figures high. Without large capital expenditure for major engineering alterations improvements could only be effected by operating the existing layouts at the highest possible efficiency.

British Railways have done much to speed up wagon turn-round by introducing the Standage Scheme in place of the old demurrage regulations, an outstanding feature of the present system being that payment for incoming loaded wagons is based on the average time they remain in the works or on the mine before being discharged. Thus the handling of traffic is no longer complicated by the necessity to keep down costs by clearing wagons as far as possible in the order in which they are received. Latterly the wagon position has been greatly improved as a result of the extensive programme of construction on which British Railways have been engaged.

Though the pressure on wagons has eased, the steep appreciation in working costs makes it essential for coal mines that economies should be effected by clearing wagons with maximum speed and so minimizing standage charges. A detailed study of traffic conditions at a number of steelworks showed B.I.S.R.A. that in some cases the general standard of efficiency was still low. In some works wagons remained loaded for up to 3½ to 4 days and locomotives were rarely usefully employed for more than half their shift time. Yet an average time of 3½ days on 2,000 wagons per week means an annual standage payment of £25,000, while a locomotive costs more than 25s. per hour whether usefully employed or not.

FACTORS OF TRAFFIC ANALYSIS

The first approach to traffic analysis was to find a measure which would give some indication of the traffic position. B.I.S.R.A. have developed a method of traffic analysis which can be applied to any works or coal mine, requires only one or two investigators on the site, necessitates no complicated mechanical or electrical wagon counting devices, and gives detailed information regarding wagon standage, locomotive utilization, and many of the causes of traffic congestion.

A convenient method of assessing the speed of wagon turn-round is by means of the "terminal user time." This is defined as the total number of wagons on hand at a given time divided by the total number of loaded wagons discharged during the preceding twenty-four hours. This figure represents the average length of time wagons remain under load and may be used in deciding whether the general position in the works is satisfactory.

A high terminal user time on a coal mine may sometimes be due to the reluctance of departmental managers to unload wagons for fear of having to pick up material from stock in the event of an interruption in the regular day-to-day consignments. This unwillingness to empty wagons springs from a natural dislike of double-handling, particularly when the loading equipment is inadequate. Double-handling is bad, but close contact between the mine traffic manager and the Railway Authorities should keep the former well informed on deliveries up to two

days in advance. It may then be found that excess material can be stocked and perhaps not picked up again for weeks, the departments being kept running with the latest arrivals of materials. B.I.S.R.A. stresses the need for adequate unloading and re-loading equipment, since the sufficiency of this equipment practically conditions the standage figures, the stocking, and the siding capacity.

For a given terminal user time the distribution of individual wagon times may vary widely. For instance, with a terminal user time of three days it may be that nearly all the wagons are being discharged in about two-four days, or it may be that many wagons are being discharged within one day while a few are being kept in sidings for many weeks. The latter may be serving no useful purposes and just occupying track.

At one steelworks a thorough investigation into the traffic problems led to an all-round increase in supervision. The miscellaneous traffic was handled and planned by a traffic foreman. Two men were stationed in shifts at the works main bottleneck. A foreman was also allocated to the reception sidings. Certain movements of traffic were planned and considerable improvements were made to the permanent way. The broad results of these measures were to improve the transport services and to bring the terminal user figure from 3½ days to below two days, thereby reducing the standage cost by approximately £200 a week.

THE FLOW OF MATERIALS

The question of materials' flow depends primarily on two factors, namely the layout of the works or mine, and the density of traffic and mode of operation. Once the general traffic efficiency has been determined by the terminal user time, the next step is therefore to analyse the traffic flow and density at key points. An understanding of the works layout and a knowledge of the materials flow will help to locate the traffic bottlenecks. Bottlenecks on a coal mine may be due either to physical causes such as bad track layout, or they may be caused by lack of programming and planning combined with an excessive traffic density. These two faults often occur together, but it is nevertheless important to try to establish what proportion of the trouble is due to traffic load and what proportion to bad railway layout. In many instances a simple diversion of miscellaneous traffic may free a main incoming route.

High density of traffic does not necessarily result in congestion provided that the traffic is kept moving, the real source of difficulties being conflicting movements. It is possible to have too many engines operating on a track system at one time, since the locomotives tend to get in each other's way. The proportion of locomotives in service to track mileage, including running lines and sidings, varies from one locomotive per mile of track to one locomotive per two miles of track.

The information obtained so far from B.I.S.R.A.'s investigations suggests that considerable time could be saved in transport services by careful planning and programming. At present certain duties are usually allocated to particular locomotives, but B.I.S.R.A. consider that more attention could be paid to the transport problem as a whole. Whenever possible, segregation of traffic should be insisted upon and every effort should be made to avoid sending locomotives into congested areas at peak periods.

A study of traffic flow and density, coupled with an examination of locomotive utilization, will serve to assess quantitatively the traffic position and will suggest the way to improvements by programming and planning.

The best way to investigate locomotive utilization is to carry out detailed time studies, an investigator riding on the footplate during the whole of the period studied and making a record of the exact time spent on each job. In this way it is possible not only to determine how much of the locomotive time is spent on actual work and how much in servicing, what delays occur and the reasons for them, but also to assess the degree of track occupation and the incidence of conflicting movements. It will therefore be possible to decide at the same time whether the locomotives are being used to best advantage on the mine and whether delays are due to derailment, lack of steam, insufficient co-ordination between drivers, or to conflicting movements which might be avoided.

STUDY OF LOCOMOTIVE UTILIZATION

B.I.S.R.A. has studied locomotive utilization in three types of works main line traffic, one of them being a private iron ore mines line, and also in works departmental and inter-departmental traffic. It is considered that locomotive time studies are fundamental and, if made from time to time, would enable any improvement or deterioration in locomotive utilization to be assessed. The locomotive occupation time can be plotted in graph form and gives valuable information regarding traffic operating conditions, the precedence of different types of goods, and the nature of the traffic which is most likely to cause delays. Locomotive utilization also serves to assess traffic density and track occupation, and is therefore a sound basis from which recommendations affecting track layout may be advanced.

B.I.S.R.A. found that even with careful supervision the efficiency of works locomotives was low. Out of an eight-hour shift only 3½ to 4 hours useful working could be expected from a steam locomotive. The average delays due to track occupation, derailments and break-downs amount to 10 per cent of the total shift time. The average standing by time, including meals, servicing and awaiting orders, etc., amounts to between 20 and 30 per cent of the shift time according to the locomotive duties. Meals and servicing alone account for 25 per cent of the shift time. The investigations have shown that if standing-by time could be reduced to near zero, locomotive availability would be increased by 20 per cent. If the locomotive shift servicing was done while the engine crew had their meal, the locomotive availability would go up by nearly one hour in every shift. Another very valuable gain could be achieved by improving the communications in the traffic system, which would also have the effect of speeding up the system as a whole, cutting down standage, and accelerating turn-round.

THE CASE FOR RADIO COMMUNICATION

B.I.S.R.A. have devoted considerable attention to the possibilities of low-power mobile Very High Frequency radio communication between works locomotives and one or more control points. Tests have shown that adequate coverage of iron and steel works sites in Britain is feasible using transmitters of 5 to 10-W power with a single fixed-station transmitting aerial mounted at a height of about 30 ft. The maximum range required might be 10 miles for a works with mines. Radio set operation and operating procedure are simple, no special training of operators being required. During experiments on a works covering about 200 acres no technical difficulty was encountered in obtaining communications in both directions with radio on a locomotive. The cost of a fixed station installation consisting of a transmitter/receiver, control unit, loudspeaker, handset or microphone, aerial and feeder might be from £160 to £200. A mobile station installation with mechanical protection, selective calling and a turbo-generator would range from £200 to £400.

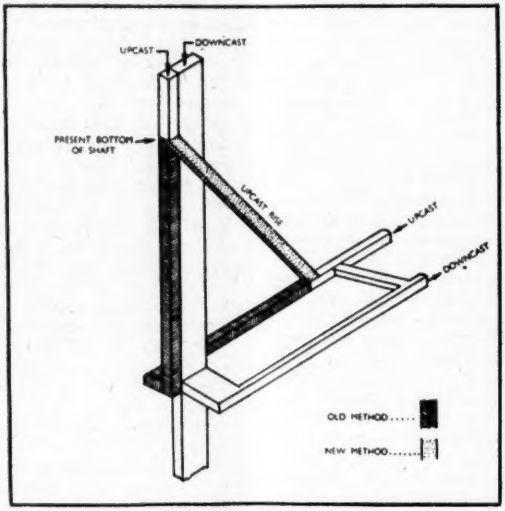
A New Ventilation System in the Orange Free State

Notice of a new ventilation system to be inaugurated in Anglo American Corporation mines of the Orange Free State goldfield is given in the current issue of *Optima*, Vol. 2, No. 3. The adapted article below describes the system and presents the advantages and disadvantages of its use.

In accordance with the policy of bringing the new gold mines of the Orange Free State into production as soon as possible, the shafts of certain Anglo American Corporation Group mines in that field were stopped before their final depth was reached in order that development might take place without delay. The shafts concerned were Welkom Nos. 1 and 2, Western Holdings Nos. 1 and 2 and President Steyn No. 1. It is intended to deepen these shafts in the near future.

The work of re-sinking will commence at Welkom No. 2, which was stopped at 3,000 ft. because, above that elevation, there was sufficient ore to allow the mine to start production. A further depth of 2,200 ft. are to be sunk in this shaft, and a new ventilation layout is to be adopted when the deepening operation is performed.

The shafts mentioned are each 46 ft. long by 11 ft. wide, and all comprise seven compartments of which five pass downcast air and two upcast. The downcast and upcast sections are separated by a concrete wall between the second and third compartments, and in the downcast section all work incidental to mining is done. No work is performed in the upcast section. One of the chief requirements for efficient ventilation is that the system must offer the least possible resistance to the flow of air, particularly the smaller area of the upcast section.



A contrasting sketch showing the old and new methods of ventilation

Seven compartment rectangular shafts were originally supported by hitch-cutting, now abandoned, and to-day concrete sills are cast around the perimeter of the shaft at intervals of 10 ft. with the steel dividers set into the sills. Apart from the fact that the sills tend to impede the flow of air, the upcast section of a shaft, owing to its smaller area, has a higher resistance to that flow than the downcast section, and the resistance increases as the shaft deepens.

A TIMBERED SHAFT EXTENSION

Preparations for the deepening of shafts temporarily stopped at producing or developing mines, disclosed that several advantages would be gained by sinking a smaller timbered shaft as an extension, and using it entirely for the functions of the downcast section. A separate shaft of large cross sectional area would be provided for the upcast flow.

Many advantages come about by use of this method. The first and possibly the most obvious, is that a smaller shaft can be sunk more speedily and at less cost per ft. than a shaft of full dimensions. Again, a smaller amount of rock from the sinking operations would be brought to surface through the main shaft, which already would be in use for conveying ore to the mill. Thus there would be the minimum of interference with ore production and development. Finally, a timbered shaft would be easier to sink under these conditions than one in which heavy concrete sills had to be cast around the perimeter. These advantages would only be valuable, however, if they could be achieved without reducing the efficiency of the flow of the ventilation system.

It was decided to make an experiment in one shaft. When the shaft is deepened, the extension will serve the purpose of the five downcast compartments in normal seven compartment shafts, and will itself be sunk as a five compartment shaft. Incline rises from each level to the one above will provide a passage for upcast air, and the top rise will connect with the first and second compartments of the seven compartment shaft.

The rises will replace the normal upcast compartments. They will be cut with a greater cross sectional area than these compartments, and thus will offer reduced resistance to the upcast airflow. They will also increase the efficiency of ventilation in the deeper levels. The rises take the place of the usual horizontal cross cut from reef to station, by which means upcast air is normally fed to the Nos. 1 and 2 compartments of the shaft.

The system has many advantages, but the method can only be used if there is no urgency for development to begin on the lower levels. Then the new ventilation system is of less value, as a continuation of the seven compartment shaft including the two upcast compartments becomes essential. In this way a passage for upcast air immediately becomes available.

When upcast air is passed through rises and not through a section of the shaft, it is necessary to complete the rise on each level to obtain through ventilation at that point before continuing to the next level. This makes the overall sinking rate much slower than for an equivalent depth of a seven compartment shaft. But the rate of sinking per ft. is faster and undue interference with production is avoided.

MACHINERY AND EQUIPMENT

Units of Magnetic Equipment

Various applications of electro magnetic chute type separators and of permanent magnetic equipment such as chutes, plates, grids, humps and traps are announced by Rapid Magnetic Machines Ltd. These magnetic equipments have their applications within the mining industry for the extraction of iron in the form of blasted drill rods carried on ore conveyor loads, or small tools and similar types of tramp iron contained in rock fragmentation.

Rapid Waterfall Type Separators are suitable for the extraction of iron content from dry materials such as clays, coal and grains. Separators of this type are equipped with from two to eight units, at widths varying from 6½ in. to 30½ in. and lengths from 25½ in. to 61½ in., and work on a wattage which rises from 60 W in the smallest size to 1,200 W in the largest.

The Electro-Magnetic Type "V" Vibratory Separators are designed for the extraction of fine and tramp iron from fine powders containing not more than 3 per cent of iron, which require mechanical motion to precipitate their flow. The material for treatment passes from a gate regulated hopper on to a vibrating unit which consists of a series of stepped magnets of high intensity, oscillating 650 times per min. in the direction of travel. The material is searched and researched as it descends, the iron being drawn into polarized cavities from the line of flow. The unit operates at wattages varying from 90 to 960 according to type and size, and may have from 3 to 8 units.

Non-electric and permanent magnaplates suitable for installation in ducts, hoppers and the like, or for suspension over conveyors or other carrying mediums, are shown in the manufacturer's wide selection of these equipments in two and four poled units.

A Range of Ore Feeders

Certain units of the firm's complete range of ore feeders are presented by the Denver Equipment Co. The Denver Adjustable-Stroke Ore Feeder is stated to be a rugged unit for any type of ore feeding problem. Its handwheel adjustment provides a wide range of feeding capacity, and belt widths vary from 12 in. to 48 in. and capacity ranges from 0.85 tons per hour to 60.0 tons per hour. Adjustment of belt speed may be made while the feeder is in operation by turning the handwheel, and idlers are closely spaced under the feed hopper to support the weight of ore from the bin.

The Denver Type "A" Apron Ore Feeder is designed to handle light and heavy materials where maximum lump size is limited and impact and service not too severe. Sidebar supported pans provide more uniform weight distribution, which prevents twisted chains and undue wear on joints. The width varies through the class from 18 in. to 48 in., with handling capacity per hour ranging from 14 to 42 tons.

The Denver Type "J" Apron Ore Feeder is designed for heavy duty use, and is operated by positive drive with gear motor, chain and sprockets. Pans are one-piece, of cast steel, and are heavily under-ribbed for extra strength and are bound together by full length axles to form a solid apron. The feeder ranges in size from 18 in. width to 48 in., and has a capacity per hour of 22 tons to 60 tons.

Tonnage capacities are based on ores weighing 100 lb. per cu. ft. at a speed of 10 f.p.m. with 8 in. depth of ore maintained on the feeder, although the depth of ore may be increased to 18 in. or 30 in.

A Drill Rig on Tractor

A patented, mobile rock drilling unit developed by Hart & Hart Co. in America, is reported as having given good results in the company's strip mine. It is said that the unit can be moved quickly and easily from one section of its task to another and that moving time has been shortened to as little as 10 or 12 seconds between holes.

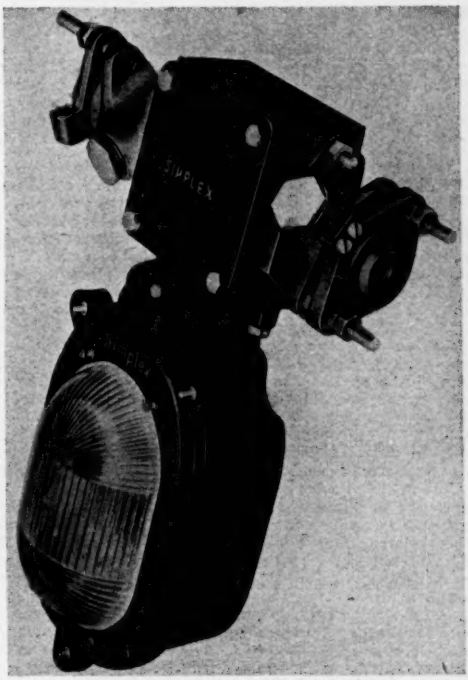
The unit comprises a caterpillar tractor, a compressor and two drills. The compressor is of the standard type and is mounted on the rear of the tractor. Two compressed air drills of the drifter type are mounted at the front, and these are able to drill horizontal or near-horizontal holes. The compressor is driven by the top transmission shaft through a separate clutch, and throttling control gives automatic adjustment of power settings while drilling.

The tractor provides a steady base for the drill so that drill shifting and strain on the auger is minimized. The drill can easily be adjusted for varied hole spacings or for drilling at an angle, and the drill masts permit the use of 14 ft. and 16 ft. augers, which would be unwieldy on the normal mobile drill unit.

Non-Flameproof Underground Lighting Equipment

A new range of non-flameproof watertight lighting fittings specially designed for collieries and other mines where the installation of watertight but not necessarily flameproof equipment is required is announced by Simplex Electric Co. Ltd. The non-flameproof and weatherproof 40-60 watt Prismatic Bulkhead Lantern Unit is an addition to the range, and is designed to be used in conjunction with the connection boxes and glands designed for the overall range.

The connection boxes mentioned house a 2-pole, 4-way insulated interior and have either three or four permanent outlet ports. To any of these ports a lamp unit may be attached or a cable connection made, the weight being taken by two studs. The



The Prismatic Bulkhead Lantern Unit

cable glands have bodies of ZIR finished cast iron, with a 1 in. diameter filling plug compound retaining partition. The armour clamp is of ZIR finish, with a twin screw bonding terminal. Under the armour, the bore range grades from $\frac{1}{16}$ in. to $\frac{3}{4}$ in.

Production of the 40-60 watt Prismatic Bulkhead Lantern unit is intended to provide a weatherproof fitting with the minimum projection and having an asymmetric light distribution. It is suited to mine roadway installation where headroom is limited, and is attached to either the three-way or four-way connection boxes of the system mentioned. The bulkhead unit and connection box may both be suspended.

The lantern body consists of a cast iron box containing a skirted BC porcelain lampholder complete with tails terminating in plug pins, specially designed to enter the sockets provided in the connection boxes. The body is flanged and has a male outlet and is supplied complete with a rubber gasket. The lantern cover is loosely hinged to the body and cemented to this is a prismatic glass. A heavy rubber gasket makes the junction between body and cover completely weatherproof.

METALS, MINERALS AND ALLOYS

The subject of nationalization is all very well, as we have found in this country, for domestic consumption, but other interests are liable to take fright at the prospect of Government acquisition. The Gold Coast Minister of Commerce and Industry has been taking pains to deny that the £100,000,000 Volta River scheme will be nationalized. The Gold Coast Government would be satisfied, he said, with a 20 per cent interest in the project. The reason for this assurance is not hard to find: Mr. Davis, of Aluminium Ltd., which is closely associated with the scheme, has said bluntly that if there were any chance of investors losing their money, they would not come in at all. The Minister's assurance is quite good so far as it goes, but it would be interesting to see what safeguards can be devised to ensure that future Governments will be bound once the money has been sunk.

The election of Carlos Ibanez del Campo as President of Chile is again raising the question of the nationalization of the copper companies. He is reported to have made this one of the points in the election campaign, but now that he is President, he might find that he will have to go cautiously. The U.S., as Chile's best customer, holds a very potent weapon in its hand, and recent events have shown that the U.S. is willing on occasions to stage a buyers' strike. Moreover, it is doubtful whether the Chileans have enough technical ability or knowledge to run the copper mines themselves, and it is doubtful if the American copper companies would not stay in the country if nationalization were enforced.

COPPER.—Views on the outlook for copper vary considerably: the Chairman and the Australian State Prices Minister, Mr. Frank Finnan, said in Sydney that his officials are predicting that copper prices "would soon begin to fall very rapidly"; when this happened the manufacturers' pool, set up to finance purchases of foreign copper, would quickly cease to be necessary and copper would be decontrolled as soon as the pool is dissolved. This view of an early decline in the price of copper is the more interesting because the domestic price of Australian copper was raised by £A.65 to £A.350 (£280 sterling) towards the end of August.

The extremely involved situation in the U.S. copper industry owing largely to price differentiations is dealt with by our Western States' correspondent in another column. This is no doubt complicating the labour situation with the M.M.S.W. Union demanding wage increases and other benefits. They have apparently actually voted to call a strike against the Calumet & Hecla Co.

As the price of foreign copper entering the U.S. has not been changed recently the Office of Price Stabilization does not require manufacturers to recalculate their price ceilings before Dec. 1. Originally, re-calculations had been planned for Oct. 1. The raising of the ceiling price on foreign copper has led to an upward surge of copper imports: in June the U.S. imported only 7,000 tons, by July 18,000 tons were imported and figures for later months are reported to be higher still. The current demand for copper continues unabated.

Mr. H. de Witt Smith has announced that O'Okiep Copper will invest a further £5,000,000 in Namaqualand in the next five years. The reports reaching this country so far do not indicate what plans of expansion are being considered. The company already has a concentrator and smelting plant in addition to the normal mining plant; it also owns the port facilities at Port Nolloth, about 90 miles away from the mines.

Differences over the price to be paid for 9,500 tons of copper ore and concentrates have been holding up the completion of an agreement between Japanese interests and Chile; this would be the second deal to be completed between these two sides, an agreement having been signed in July. Total sales to date are reported as 15,000 tonnes.

LEAD.—The U.K. price of lead scrap has been reduced £7 10s. per ton d/d to £113 10s. 0d. This move has been dictated by two considerations: the narrow margin between the price of scrap and the Ministry of Materials' selling price of virgin lead has led to large amounts of scrap being offered, and fears of a fall in the price of virgin lead when the free market in the metal re-opens on Oct. 1.

The Board of Trade has announced the arrangements made for the import and export of lead when the London Metal Exchange re-opens. The export of refined lead in pig or ingot form will be resumed. Members of the Exchange who participate in the Bank of England Exchange Control scheme will be granted open individual licences for the importation of lead in pigs, ingots, blocks, bars, slab or cake but not in alloy form. These licences will apply for lead from any source. Consumers who wish to import regularly but not through the Exchange will be granted open individual licences for appropriate sources of supply. Applicants will be required to state the quantities they expect to import in the ensuing twelve months and the main sources of supply. A condition of the granting of the licence will be an undertaking to supply the Board of Trade with details of the value and source of imports; this information will be required monthly.

A further step has been taken on the road towards re-opening the Lead Exchange by the appointment of Mr. P. G. Smith of Messrs. Bassett Smith & Co. as Government-broker for the metal. This appointment has been taken as a confirmation that the official assurance of the Government's anxiety to help the Exchange includes a determination not to unload stock hurriedly.

TIN.—Straits shipments in August of 5,552 tons were slightly below the July level of 5,937 tons. The U.S. took 2,095 tons, the Continent 1,641 tons, and the U.K. 1,134 tons. The talks between Bolivia and the U.S. authorities regarding a new tin purchase agreement continue suspended—it is believed on Bolivian initiative.

ZINC.—The American Zinc Institute has protested against the continued substitution of other materials for zinc when the substitutes do not result in improved products or reduced costs. The Institute states that world zinc mine reserves are more than twice as large as in 1931 despite continued accelerated use, and it claims that important consumers have concluded that adequate future supplies will be available to meet future needs.

The settlement of the American steel strike ended the piling up of zinc stocks in the U.S. but it came too late in August for any impression to be made on the accumulated stocks. The American Zinc Institute estimates that zinc stocks at the end of August were 96,651 s.tons, as compared with 96,919 at the end of July. Production in August was 78,167 s.tons and total shipments 78,435 s.tons. The export price for Prime Western is 13-13.20c. per lb.

ALUMINIUM.—Drought conditions in the Pacific north-west area of the U.S. is causing a loss of electric power, which in turn is affecting the production of aluminium in the area. The precise effect on the industry is difficult to judge at the moment, but it is estimated that 5,000 s.tons have been lost already, and if power cuts remain until December, the loss might be as high as 60,000 s.tons. When power cuts were imposed last year, the Defence Mobilizer, then Mr. Charles Wilson, suggested, amid a chorus of criticism, that aluminium smelters should move their plant from the area.

The production of bauxite in the U.S. during the first half of 1952 was even less than in the corresponding period of 1951. The decline was, it is true, only slight, from 887,636 tons to 884,881 tons, but the recession is much greater when measured against the output of 976,440 tons in the second half of 1951. Imports during the first six months of the year were, however, greater at 1,578,641 tons, as compared with the revised estimate of 1,363,528 tons in the first half of 1951 and 1,466,401 in the second half of last year.

Reports from Kingston, Jamaica, state that the British Aluminium Co. is exploring bauxite deposits about 20 miles from the town. If the deposits are sufficiently large to justify commercial exploitation, the company will apply for mining rights similar to those granted to American and Canadian companies.

The large aluminium plant being erected near the big bauxite deposits at Razine, near Sibenak, on the Dalmation coast, is nearing completion. Machinery is now being installed in preparation for the start of production at the end of the year. The rolling mill is planned to commence in the middle of next year.

Although the final prospecting work at Marchinbar Island, Arnhem Land in the Northern Territory, Australia, will not be completed for another couple of months, the geologist in charge has said that the deposits are the largest in the country and eventually will eliminate the need for the importation of bauxite for the Bell Bay, Tasmania, plant.

ANTIMONY.—The U.S. Bureau of Mines estimates that the domestic mine production of antimony in June was at 305 s.tons, 15 per cent less than in May, but that smelter output in June was 8 per cent greater at 1,050 s.tons. Stocks held by producers and smelters at the end of the month stood at 3,628 tons, a decrease of

16 per cent over the beginning of the month; industrial stocks were, however, only 2 per cent down over the month.

CHROME.—The greater world demand for chrome has stimulated prospecting for the metal in Turkey. Whereas the number of mining applications to the Turkish Government were 4,280 in 1950, they were almost doubled at 8,290 in the first half of the present year. The report from Istanbul giving this information states that in all cases prospecting was successful, but no estimate was given of the effect which this successful prospecting would have on production.

LITHIUM.—Work has commenced on the building of a lithium processing plant at Sunbright, Virginia for the Foote Mineral Co. of Philadelphia. The plant, whose capacity has not been revealed, is expected to be ready within a year.

TUNGSTEN.—The Defence Production Administration has announced an increase in the expected supply position for tungsten up to the end of 1954. This is an increase of 3,000 s.tons over the figure announced on August 1 and an annual increase of 15,500 s.tons over the 1950 rate of new supply. Foreign producers are providing the greater part of the U.S. tungsten supply. Supplies after 1954 will be reviewed at a later date. No change in the London market is reported this week.

GOLD.—The gold output of the Union of South Africa in August was 997,099 f.oz. (Transvaal 976,372, O.F.S. 20,727) compared with 1,010,975 f.oz. in July.

The London Metal Market

(From Our Metal Exchange Correspondent)

Whilst no particular feature has appeared recently, the tin market has continued firm and the price has been gradually creeping upwards, although the London standard market failed to follow a sharp rise in the Eastern price on the 5th instant. The backwardation has narrowed slightly but while stocks in warehouse remain at the present low figure there is always a possibility of a sudden increase in the premium for spot material.

In the East the market has been firm and the tendency there has been on the whole upwards.

Electrolytic copper wirebars in Europe are about 35¼c., in America 36-36½c., whilst forward material is offered at about 33¼c., and European cathodes at about 34c.

Lead changes hands at around £113/115, but the market is quiet.

Zinc is likewise quiet with g.o.b's £100/£103.

On Thursday the official close on the tin market was: Settlement price £955, Cash Buyers £955, Sellers £956; Three months Buyers £945 10s., Sellers £946 10s. In the afternoon the market was dull and easier. Turnover for the day was 45 tons. Approximate turnover for the week was 625 tons.

The Eastern price on Thursday morning was equivalent to £978 5s. per ton, c.i.f. Europe.

Iron and Steel

Although no dramatic changes have occurred or are expected in the iron and steel trade, there is a feeling of increasing confidence that the industrial checks imposed by the steel shortage will be overcome. Perhaps the extent of the demand has been exaggerated. When supplies are scarce, consumers are inclined to overstate their requirements. In any case, home production of iron and steel is now rising rapidly and the increase in the tonnage of imported material is still more impressive. As a result, allocations for the fourth quarter will certainly be on a more generous scale, and in this respect promises may be exceeded by performance.

Production last month, as in July, was adversely affected by the holidays, but all the big steel plants are now in full operation and with ampler supplies of raw material are steadily increasing their outputs, and reducing their arrears in deliveries.

Expansion of production is not confined to this country. In Western Germany the acceleration of output is even more pronounced. Latest news from Bonn is that steel production is running at the rate of 16,200,000 tons per annum which slightly exceeds the British figure, and German pig iron production is substantially greater than ours. Belgium, too, has a considerable exportable surplus of steel and in the form of steel semis is sending big tonnages to Britain for use in the sheet and re-rolling mills.

The outcome of these developments is that there is growing competition for overseas business and the export drive is running into heavy weather. On the other hand there is no slackening in the requirements of home consumers and disposal of maximum outputs presents no difficulty. Shipbuilders will need increases much greater than the promised 8 per cent to complete their building programmes for 1952, wagon builders and power plant erectors also require more steel to meet their commitments and tube makers are in much the same position.

A feature of the iron and steel scrap trade is the improvement in the available supplies of both home and foreign scrap. Foundries are now reasonably well covered for cast iron scrap, but steel makers are still keen buyers of all grades of material suitable for use in the smelting shops.

U.K. PRIMARY METAL STATISTICS—JULY

(long tons)

	Refined Copper	*Lead†*	*Slab Zinc*	*Tin Metal*
Stocks in U.K. July 1	83,503	121,576	87,526	4,171‖
Imports	24,305	3,777	30,184	Nil
Production	21,118	7,580	5,135	2,510*
Consumption	45,113	17,294	12,606	1,898
Exports and Re-exports	64	62	37	729
Stocks in U.K. July 31‡	89,278	116,283	106,112	3,089‖

(Source: British Bureau of Non-Ferrous Metal Statistics)

(*) Estimated by International Tin Study Group. (†) Includes imported virgin lead and English refined from domestic ore and secondary metal. (‡) Including Government stocks other than strategic reserves. (‡) In addition U.K. stocks of blister copper at the end of July were 18,341 tons; of zinc concentrates were 34,036 tons; and of tin in ore were 2,641 tons. (‖) Including tin in official warehouses and smelter carry-over.

SEPTEMBER 11 PRICES

COPPER

Electrolytic ... ... £285 0 0 d/d

TIN

(See our London Metal Exchange report for Thursday's prices)

LEAD

Soft foreign, duty paid ... ... £131 0 0 d/d
Soft empire ... ... £131 0 0 d/d
English lead ... ... £132 10 0 nom.

ZINC

G.O.B. spelter, foreign, duty paid ... £122 0 0 d/d
G.O.B. spelter, domestic... ... ... £122 0 0 d/d
Electrolytic and refined zinc ... ... £126 0 0 d/d
Special high grade ... ... £128/ 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over ... ... £225 per ton
Crude (70%) ... ... £210 per ton
Ore (60% basis) ... ... 22s. 6d./27s. 6d. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) ... ... £454 per ton

OTHER METALS

Aluminium, £157 per ton.
Bismuth, 18s. lb. (min. 2 cwt. ex-warehouse).
Cadmium, (Empire) 14s. 4d. lb.
Chromium, 6s. 5d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.oz.
Iridium, £65 oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96%-98%) 2s. 2d./2s. 3d. per lb. d/d
Osmiridium, £35 oz. nom.
Osmium, £70 oz. nom.
Palladium, £8 10s. oz.
Platinum, £27/£33 5s. nom.
Rhodium, £45 oz.
Ruthenium, £30 oz.
Quicksilver, £64 10s. ex-warehouse
Selenium, 25s. nom. per lb.
Silver 73d. f.oz. spot and f'd.
Tellurium, 18s./19s. lb.

ORES, ALLOYS, ETC.

Bismuth ... ... 60% 9s. lb. c.i.f.
50% 8s. lb. c.i.f.

Chrome Ore—
Rhodesian Metallurgical (lumpy) £14 2s. per ton c.i.f.
,, ,, (concentrates) £14 2s. per ton c.i.f.
,, ,, Refractory £13 14s. per ton c.i.f.
Baluchistan Metallurgical ... £15 8s. per ton c.i.f.
Magnesite, ground calcined ... £26 - £27 d/d
Magnesite, Raw ... ... £10 - £11 d/d
Molybdenite (85% basis) ... 105s. 10d. per unit c.i.f.
Wolfram (65%) ... ... 425s. c.i.f. U.K. buying
,, ,, ... 447s. 6d. d/d U.K. selling
Tungsten Metal Powder (for steel manufacture) ... 31s. 7d. nom. per lb. (home)
Ferro-tungsten ... ... 28s. 7d. nom. per lb. (home)
Carbide, 4-cwt. lots ... ... £32 3s. 9d. d/d per ton
Ferro-manganese, home ... £49 0s. 8d. per ton
Manganese Ore U.K. (48% - 50%) ... ... 6s. per unit
Brass Wire ... ... 2s. 9d. per lb. basis.
Brass Tubes, solid drawn ... 2s. 3½d. per lb. basis.

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

The gilt-edged market, which started the week hesitant, recovered towards the end of the period. Transactions were reported on a larger scale than hitherto. While this can partly be attributed to the result of the T.U.C. meeting, it is thought in some quarters that the ground was perhaps being prepared for government re-financing operations which will shortly fall due.

Kaffir shares had an erratic week. Many of the older mines turned dull on lack of interest but some of the younger producers and developers recorded useful gains in quiet trading conditions. A further list of uranium producers was announced. On the Rand, Luipaards Vlei and Randfontein Estates were mentioned. While this had a favourable reception, its effect on share values was not marked.

Mr. Havenga's speech at the I.M.F. meeting advocating a higher dollar price for gold had been anticipated, as also the U.S. attitude that there was no call for this at present. More and more people now anticipate that sooner or later something will have to be done about this problem, but no move is likely until after the presidential elections. In some quarters the view is now held that U.S. insistence on the present price is having a clogging effect on world trade, and reports emanating from Johannesburg suggest that Mr. Havenga may have alternative schemes in mind following the rejection of his suggestion. Two rumours are that some barter scheme for gold against goods may be adopted, or that gold coins may be minted in Pretoria.

The bulk of the new uranium producers named are in the O.F.S. The following mines are listed: Free State Geduld, President Brand, President Steyn, Welkom, Western Holdings and Virginia. Following this news, most O.F.S. issues advanced sharply. Spice was added to the market by anticipation of development results due during the next few months. Welkom was particularly favoured. Dealings in the Free State Geduld options started well and they have changed hands in Johannesburg as high as 15s. 6d.

West African gold shares hardened in a quiet market. Better results from Ashanti and Marlu encouraged buyers. Ariston produced a record working profit for August of £56,694. This is the only West African mine to have done consistently better during the current year. Market circles are also looking for better news from the Gold Coast Selection Trust group during the coming months. The West African Minister for Commerce and Industry, who is on a visit to London, has issued a statement emphatically denying that his government intends to nationalize the mines either now or in the future. This may go some way towards allaying fears of adverse political developments on the Gold Coast. The labour position is also reported to be somewhat easier.

The Australian delegate to the I.M.F. strongly supported Mr. Havenga's move for a higher dollar price for gold. This fact, and the high assay values announced last week for Gold Mines of Kalgoorlie, aided prices in this section.

Diamond shares, while experiencing small turnover, improved on the higher price asked for certain qualities of rough stones by the Diamond Trading Co. The average increase will be between 2 and 2½ per cent.

Copper shares boiled over. New wage demands have been submitted by the Mineworkers Union and these are likely to affect both European and African workers. Two major requirements out of the twenty-one points put forward have been referred to conciliation. Rhodesia Katanga were outstanding on speculative support following rumours that favourable development results could shortly be expected from the Kansanshi property.

Malayan tin issues all improved on the better metal price, and encouragement was also received from the recent Tronoh dividend. Nigerian shares also hardened with columbite producers in the lead.

Barriers which started firm, showed some hesitation in later dealings, but Mount Isa were outstanding on hopes of future copper and possible uranium production. The New Broken Hill mine has started up its mill and ore is now being hauled through its own shaft. The mill is capable of treating 350,000 tons per annum, and is capable of expansion as production increases.

	Price Sept. 10	+ or − on week
FINANCE		
African & European	2½	+ ⅛
Anglo American Corpn.	6⅝	
Anglo-French	19/6	−6d
Anglo Transvaal Consol.	26/3	
Central Mining (£1 shrs.)	35/3	−1/-
Consolidated Goldfields	46/3	
Consol. Mines Selection	28/10½	
East Rand Consols	2/7½	
General Mining	4⅜	− ⅛
H.E. Prop.	33/9	
Henderson's Transvaal	10/9	+1/1½
Johnnies	2¼	− ⅛
Rand Mines	4⅜	
Rand Selection	39/4½	+7½d
Strathmore Consol.	30/-	
Union Corp. (2/6 units)	32/9	−1/-
Vereeniging Estates	3⅛	+ ⅛
Writs	31/3	−7½d
West Wits	43/1½	+7½d
RAND GOLD		
Blyvoors	42/6	+3d
Brakpan	18/-	+3d
City Deep	33/9	
Consol. Main Reef	33/9	
Crown	42/6	−1/3
Daggas	3⅛	
Doornfontein	27/3	+6d
Durban Deep	3¼	+ ⅛
E. Daggas	18/9	+6d
E. Geduld ... (4/- units)	43/9	−7½d
E. Rand Props	4⅜	+ ⅛
Geduld	6⅛	
Govt. Areas	12/10½	−4½d
Groote Vlei	30/8	
Libanon	12/6	3d
Luipaards Vlei	21/6	+3d
Marievale	20/3	−6d
Modderfontein East	22/6	
New Kleinfontein	28/1½	−7½d
New Pioneer	16/-	−3d
Randfontein	22/6	−1/3
Robinson Deep	12/3	−3d
Rose Deep	25/7½	−7½d
Simmer & Jack	6/1½	−3d
S.A. Lands	39/4½	+1/3
Springs	7/3	−1½d
Stilfontein	26/-	+7½d
Sub Nigel	2⅜	− ⅛
Van Dyk	13/1½	−1½d
Venterspost	20/-	
Vlakfontein	17/4½	+4½d
Vogelstruisbult	29/-	+3d
West Driefontein	6⅜	+ ⅛
W. Rand Consolidated	54/4½	+7½d
Western Reefs	43/9	+7½d
O.F.S.		
Freddies	7/6	+3½d
Freddies N.	7/6	−3d
Freddies S.	7/3	−1½d
F.S. Geduld	2⅜	+ ⅛
Geoffries	16/9	−3d
Harmony	19/6	+3d
Loraine	7/3	
Lydenburg Estates	11/-	+6d
Merriespruit	4/-	
Middle Wits	16/10½	+1½d
Ofsits	43/9	+9d
President Brand	20/9	+1/6
President Steyn	18/10½	+7½d
St. Helena	17/4½	+7½d
U.F.S.C. & G.	8/-	+1/3
Virginia Ord.	13/4½	+1/1½
Welkom	28/3	+1/3
Western Holdings	3⅜	+ ⅛
WEST AFRICAN GOLD		
Amalgamated Banket	1/7½	
Ariston	6/1½	−3d
Ashanti	17/9	
Bibiani	6/3	
Bremang	2/4½	
G.C. Main Reef	3/10½	+1½d
G.C. Selection Trust	7/3	+3d
Konongo	2/7½	
Lyndhurst Deep	1/1½	
Marlu	1/6	+4½d
Taquah & Abosso	3/6	
AUSTRALIAN GOLD		
Boulder Perseverance	2/3	−1½d
Gold Mines of Kalgoorlie	10/9	+9d
Great Boulder Prop.	5/4½	
Lake View and Star	17/9	+9d
Mount Morgan	19/9	−1/-
North Kalgurli	12/9	
Sons of Gwalia	7/9	
South Kalgurli	7/10½	−1½d
Western Mining	8/9	
MISCELLANEOUS GOLD		
Cam and Motor	42/-	
Champion Reef	7/3	
Falcon Mines	9/-	
Globe & Phoenix	24/3	
G.F. Rhodesian	6/9	−3d
London & Rhodesian	5/7½	+3d
Motapa	2/1½	−1½d
Mysore	4/-	−3d
Nundydroog	6/-	
Coregum	2/9	
Oroville	11/4½	−1½d

	Price Sept. 10	+ or − on week
MISCELLANEOUS GOLD (contd.)		
S. John d'El Rey	26/-	+1/9
Zams	37/9	+1/3
DIAMONDS & PLATINUM		
Anglo American Inv.	4 ⅛	+ ⅛
Casts	29/9	+3d
Cons. Diam. of S.W.A.	4	
De Beers Defd. Bearer	68/6	+9d
De Beers Pfd. Bearer	14⅞	
Pots Platinum	9/4½	+4½d
Waterpaal	15/-	
COPPER		
Chartered	63/9	+9d
Esperanza	4/-	+1½d
Indian Copper	4/1½	+1½d
Messina	4½	− ⅛
Nchanga	7⅜	− ⅛
Rhod. Anglo-American	62/3	+1/3
Rhod. Katanga	15/4½	+1/1½
Rhodesian Selection	19/3	+6d
Rhokana	22½	− ½
Rio Tinto	26	− ½
Roan Antelope	14/10½	+9d
Selection Trust	45/7½	+2/6
Tanks	64/6	+6d
Tharsis Sulphur Br.	43/9	
TIN (Eastern)		
Ayer Hitam	25/7½	+1/10½
Bangrin	8/8	+6d
Gopeng	10/10xd	+6d
Hongkong	6/9	+3d
Ipoh	22/-	+9d
Kamunting	11/10½	+4½d
Kepong Dredging	7/9	+4½d
Kinta Tin Mines	12/7½	+4½d
Malayan Dredging	22/3	+9d
Pahang	16/-	+6d
Penkalen	9/9xd	+3d
Petaling	14/4½	+1½d
Rambutan	12/-	+3d
Siamese Tin	21/-	+6d
Southern Kinta	16/1½	−1½d
S. Malayan	25/7½	+10½d
S. Tronoh	13/9	+7½d
Sungei Kinta	18/6	+9d
Tekka Taiping	7/9	+10½d
Tronoh	25/3	+1/6
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	11/-	+9d
Beralt Tin	26/3	+7½d
Bisichi	4/9	+1½d
British Tin Inv.	16/3	+1½d
Ex-Lands Nigeria	5/1½	+1½d

	Price Sept. 10	+ or − on week
TIN (Nigerian and Miscellaneous) contd.		
Geevor Tin	13/6	+9d
Gold & Base Metal	3/4½	+1½d
Jantar Nigeria	11/6	+1/3
Jos Tin Area	10/-	
Kaduna Prospectors	3/9	−3d
Kaduna Syndicate	5/-	
London Tin	5/10½	
United Tin	2/4½	
SILVER, LEAD, ZINC		
Broken Hill South	50/-	
Burma Corporation	1/10½	
Consol. Zinc	28/3	+6d
Lake George	17/1½	+7½d
Mount Isa	40/-	+1/6
New Broken Hill	28/-	+1/-
North Broken Hill	60/-	+1/-
Rhodesian Broken Hill	18/1½	+9d
San Francisco Mines	31/-	
Uruwira	5/1½	−1½d
MISCELLANEOUS BASE METALS & COALS		
Amal. Collieries of S.A.	47/6	
Associated Manganese	45/6	−1/6
Cape Asbestos	19/9	−3d
C.P. Manganese	52/-	
Consol. Murchison	31/3	+1/10½
Mashaba	9d	
Natal Navigation	3½	
Rhod. Monteleo	13/6	−3d
Turner & Newall	94/3	+1/3
Wankie	17/6	−1/-
Witbank Colliery	2¾	
CANADIAN MINES		
Dome	$40	−$1
Hollinger	$32½	−$½
Hudson Bay Mining	$121	−$2
International Nickel	$83¾	−$¾
Mining Corpn. of Canada	£5⅛	−£⅛
Noranda	$138	+$3
Quemont	£7⅞	−£⅛
Yukon	4/6	+3d
OIL		
Anglo-Iranian	6½	+ ⅛
Apex	45/-	
Attock	22/6	−7½d
Burmah	46/3	
Canadian Eagle	35/-	
Mexican Eagle	24/7½	+1/6
Shell (bearer)	4⅜	− ⅛
Trinidad Leasehold	30/3	+1/3
T.P.D.	27/6	
Ultramar	32/3	−7½d

COMPANY NEWS AND VIEWS

Powell Duffryn's Good Trading Profits

Sir Herbert Merrett, Chairman of Powell Duffryn, in his annual statement said that 97 per cent agreement has been reached voluntarily among the former South Wales colliery owners as to their share of the District's global award. This is not to say, however, that a settlement of these claims against the Government is just around the corner. The voluntary agreement has yet to be agreed by the District Valuation Board as does the outstanding 3 per cent. While the valuation of the ancillary assets, which include such substantial items as power stations, briquetting works, etc., has yet to be achieved. Powell Duffryn is deeply interested in these ancillary assets and the chairman expects a further large issue of coal stock to come. At the same time, he makes clear that a final settlement will not result in any capital return to shareholders. The company's assets vested in the National Coal Board appear in the latest balance sheet at £12,602,593.

With regard to that side of the group's activities which are free from nationalization claims and into which the previous compensation monies have been injected, consisting of coal and oil distribution, colliery management, engineering activities, etc., these are expanding in a healthy manner as is indicated by the increase in trading profits for the year ended March 31, 1952, from £1,006,308 to £1,442,472.

While trading conditions will become even keener during the coming year, the group is well organized to cope with such difficulties and to secure its share of the available trade. The annual meeting will be held on September 24.

Climax Rock Drill's Bigger Turnover

Climax Rock Drill and Engineering Works, which is now a subsidiary of Holman Brothers, has published its report and accounts for the 15 month period ended March 31, 1952. During this period the company expanded its activities both at home and abroad—the overseas market providing the major field for its products. More specifically, turnover rose by 14.6 per cent over the previous 15 month period. Net profit, before tax, amounted to £57,160 against £40,825 in the previous year which is, on a 15 months' basis £51,031, so that profit for the period under review was, *pro rata*, £6,129 higher.

The company is well aware that competition is becoming keener and also that currency difficulties abroad may affect future sales, but is confident that demand for their equipment will increase.

The annual meeting will be held on September 23. Mr. Ralph Ewing is chairman.

Halkyn United to Repay 3s. per 5s. Unit

Halkyn District United Mines has announced that it will recommend to shareholders at an extraordinary meeting to be held in Chester on October 1 a capital repayment of 3s. per 5s. unit of the £205,675 issued capital. The company emphasizes that this repayment of capital will not affect the position of the company as a going concern and that there will be ample funds remaining with which to carry on mining operations.

Wankie Fuel Sales Top 2,500,000 Tons

For the first time since the mining of coal began in Southern Rhodesia nearly half a century ago, fuel sales of the Wankie Colliery Co. for the year ended August 31 last exceeded 2,500,000 tons. Wankie sold 2,372,946 tons of coal, which showed an increase of 11½ per cent compared with the preceding year, 113,375 tons of coke, 12,256 tons of breeze and 28,712 tons of slurry.

New Broken Hill Starts Up its Own Mill

New Broken Hill Consolidated has announced that its own mill, capable of treating 350,000 tons of ore per annum, has started up and that the haulage of ore will be through its own shaft. Formerly, New Broken Hill's ore was hoisted through Zinc Corporation's main shaft and treated in that company's mill.

F.S. Geduld Share Issue Successful

Free State Geduld Mines has announced that of the 1,000,000 5s. shares offered to shareholders at 45s. per share, 985,956 shares were taken up, leaving 14,044 shares available to applicants for excess shares.

Rand and O.F.S. Mine Returns for August

The general impression emerging from the Rand and O.F.S. gold mining returns for August is that tonnages treated were lower and profits smaller and that costs have risen a little further.

Stilfontein recorded a profit of £3,434 against a loss of £19,245 in July, its first month as a producer. Welkom's profit was smaller but St. Helena continued to make steady progress.

Company	August, 1952 Tons (000)	Yield (oz.)	Profit (£000)	Year ends	Current Financial Year Total to Date Tons (000)	Yield (oz.)	Profit (£000)	Last Financial Year Total to Date Tons (000)	Yield (oz.)	Profit (£000)
Gold Fields										
Libanon	83	16599	42.0	J	166	33,203	84	174	32,195	91
Luipaards V.	103	19391	51.3	J	207	38,876	103	204	37,777	120
Rietfontein	27	6048	27.0	D	217	48,142	221	219	48,675	252
Robinson	117	19598	16.6	D	906	148,361	95	891	140,891	93
Simmer & J.	123	19684	13.1	D	993	158,253	130	1005	159,589	257
Sub Nigel	66	23042	120.1	J	135	46,882	249	135	47,931	273
Venterspost	104	23920	64.5	J	209	47,545	125	208	44,304	149
Vlakfontein	38	13947	79.8	D	297	110,590	632	294	110,712	647
Vogels	78	20547	81.2	D	633	165,449	644	614	154,332	668
West Drei	25	14301	97.3	J	51	28,996	197	—	—	—
Anglo American*										
Brakpan	122	21540	35.9	D	936	169,550	297	920	172,725	474
Daggas	236	56039	392.8	D	1867	445,033	3156	1847	456,574	3483
East Daggas	96	17094	63.0	D	773	138,202	509	792	145,650	675
S. A. Lands	111	20023	69.0	D	889	160,293	572	910	159,310	637
Springs	166	21896	22.3	D	1319	172,755	152	1342	174,187	272
Welkom	53	10189	5.1	D	383	64,497	L59	—	—	—
W' Reef Ex.	115	23852	101.7	D	892	186,804	826	788	176,200	903
Central Mining										
Blyvoor	106	63868	556.0	J	218	132,265	1160	219	143,159	1305
City Deep	157	31393	24.0	D	1234	248,296	208	1299	263,724	588
Consol M.R.	185	25845	30.0	J	373	51,956	65	395	53,406	104
Crown	273	43224	43.1	D	2142	346,760	305	2198	372,754	821
D. Roodep'rt	183	30909	84.6	D	1441	246,711	669	1434	245,706	813
East Rand P.	208	44198	136.4	D	1667	356,609	1193	1756	358,018	1457
Modder B.	56	6228	5.7	D	454	50,195	53	435	49,776	75
Modder East	117	13504	22.7	J	239	27,545	46	251	29,055	78
Rose Deep	81	11289	8.2	D	669	92,968	83	660	93,471	176
Welgedacht	34	4167	4.5	J	69	8,487	9	67	8,022	8
J.C.I.*										
E. Champ	28	4395	8.0	D	245	37,175	66	261	38,647	88
Govt.G.M.A.	252	32615	50.1	D	1940	256,503	398	1827	252,550	463
New State	47	5879	1.0	D	364	51,188	8	483	61,764	25
Randfontein	355	41050	30.1	D	2817	332,807	236	2712	329,378	387
Wit. Gold	61	7314	2.4	D	478	57,092	20	474	54,557	30
Union										
East Geduld	146	43814	347.3	D	1161	348,342	2757	1164	349,246	2855
Geduld Prop.	105	15247	31.6	D	839	121,754	286	842	123,899	370
Grootvlei	192	41570	265.4	D	1555	336,917	2163	1563	350,684	2383
Marievale	61	15400	71.3	D	485	121,573	565	487	121,176	603
St. Helena	53	10536	9.0	D	376	74,225	37	—	—	—
Van Dyk	107	15404	12.4	D	858	123,922	99	803	121,154	146
General Mining*										
S. Roodep'rt	27	6138	23.0	J	55	12,463	47	55	12,212	47
W.RandCon.	220	33960	121.0	D	1694	264,553	988	1694	270,893	1302
Anglo Transvaal*										
N.Klerksd'p	12	1326	1.0	D	90	10,055	8	71	8,409	10
Rand Leases	185	30987	65.5	J	373	62,375	139	369	61,439	175
Village M.R.	33	5311	15.0	J	67	10,599	30	68	10,601	36
Others										
N. Kleinf't'n	110	14423	31.7	D	850	111,845	550	863	112,261	342
Spaarwater	11	2381	L1.8	D	83	18,931	L21	83	18,841	L18
Stilfontein	43	8595	3.4	D	83	15,006	L16	—	—	—
W. Nigel*	17	—	7.1	J	33	—	14	20	—	1

Notes.—Profit figures are in all cases figures of working profit excluding profit from sale of gold at premium prices. In case of groups marked with an asterisk (*) profit includes sundry revenue. Profit figures preceded by L indicate a loss.

The World's Greatest Bookshop

FOYLES

FOR BOOKS of

Large dept. for Technical Books

New, secondhand and rare Books on every subject. Stock of over 3 million volumes

Subscriptions taken for British, American & Continental magazines

119-125 CHARING CROSS RD., LONDON, W.C.2

Gerrard 5660 (16 lines) ✱ *Open 9-6 including Saturdays*

Two minutes from Tottenham Court Road station

WESTERN MINING CORPORATION

The Nineteenth Annual Ordinary General Meeting of Western Mining Corporation Ltd. was held on September 4 in Melbourne. (The figures quoted are in Australian currency.)

Mr. Frank F. Espie, B.E., presided in the absence through indisposition of the chairman, Sir Walter Massy-Greene, K.C.M.G., and read the speech prepared by the latter, in the course of which it was stated:

The profit for the year under review was £73,906, as compared with £101,611. Income from dividends at £61,679 was £45,243 less, receipts from Central Norseman Gold Corporation N.L. being down by £16,406 and from Gold Mines of Kalgoorlie Ltd. down by £28,837. Income from sources other than dividends totalled £24,365, against a comparable figure of £15,893.

The balance brought forward at April 1, 1951, was £487,296. The profit for the year ended March 31, 1952, of £73,906, less appropriation for taxation, £2,467, gives a total of £558,735. Deduct dividend No. 9 of 6d. per unit paid on August 17, 1951, absorbing £69,859 leaves a balance to carry forward of £488,876. Since the close of the financial year dividend No. 10 of 6d. per unit of stock was paid on August 22, 1952.

OPERATING COMPANIES' PROGRESS

At the last annual meeting I informed you that it was hoped that Central Victoria Dredging Co. N.L. would, by way of dividends, contribute to our income during the year under review. Whilst the dredge operating on the Jim Crow area had a satisfactory year unfortunately the company experienced two setbacks with the dredge at Amphitheatre which, together with power restrictions, severely curtailed operations and these facts, together with expenditure of a capital nature, precluded the payment of dividends. These mechanical difficulties have now been overcome and we anticipate that this company will, in future, show a substantial margin of profit.

Advances to New Coolgardie Gold Mines N.L. reached the figure of £131,000 during the year but was reduced to £127,500 by the end of the financial year and has since been further reduced to £123,000. It is anticipated that the financial position of this company will show a gradual improvement.

I also informed you at the last annual meeting that it appeared that, subject to delays in the delivery of equipment, Great Western Consolidated N.L. would be in production in the latter part of 1952. The schedule for construction and mine development has been maintained in the face of many difficulties and subject to delivery of several major items of plant the objective is to start operations in October, 1952.

An encouraging feature in the recent report by Gold Mines of Kalgoorlie (Aust.) Ltd. is the prospect of developing new ore in the upper part of the calc schist immediately below the out-cropping quartz dolerite. It is now thought that the calc schist carries more ore than previously expected in its margins adjacent to the upper quartz dolerite. An important feature is the consistently high grade of ore which the company has been developing in these areas for some time past.

Kalgoorlie Southern Gold Mines N.L. in which we have a 20 per cent interest, is conducting a drilling campaign to investigate the possibility of the repetition of the Kalgoorlie system of ore veins to the southwards along the line to the Kalgoorlie syncline. The results so far obtained give every encouragement to continue the campaign.

The reports from Central Norseman Gold Corporation N.L. show highly satisfactory results, both from the operating and development angle, and the future of this company appears to be extremely favourable.

PROBLEM OF RISING COSTS

Since I last addressed you the gold industry has been subjected to another twist of the screw of rising costs, which, if permitted to go on unchecked, so long as the price of gold remains fixed at the present level, must result in creating serious problems for many mines. It is not merely the cost of labour which is worrying us; the cost of all or nearly all consumable stores and capital goods continues to keep pace with the rise in wages, all of which react on the gold industry in an adverse way and constantly reduce the limits of the ore reserves in the mines which can be profitably extracted. It is no use blinking this fact. It is one to which all governments throughout the world, whether of countries which are producers of gold or not, should give urgent and immediate consideration, because, as time goes on, the need for the reinstatement of gold in its time honoured role, as the regulator of the world's exchanges, is becoming more and more self evident. The longer the era of managed or, as many would have it, mismanaged currencies the more chaotic the trading conditions of the world must become.

Little by little signs are emerging that the world not only cannot do without gold but that it must have it. Moreover, there must be a sufficient quantity of gold so that it can function in its proper role.

The report was adopted.

GOLD MINES OF KALGOORLIE (AUST.)

ENCOURAGING DRILLING RESULTS

The First Annual Ordinary General Meeting of Gold Mines of Kalgoorlie (Aust.) Ltd. was held on September 3 in Melbourne. (The figures quoted are in Australian currency.)

Sir Walter Massy-Greene, K.C.M.G. (the chairman), in the course of his speech said: Since the formation of this company in October, 1951, to the end of the financial year, the tonnage treated was 77,901 for a recovery of 21,427 f.oz. of gold, equivalent to a grade of 5.5 dwt. per ton. The resultant net profit was £79,181.

As the mining operations carried out by the old and the present companies were continuous over the year, the report of the directors sets out the results of the financial years ended in 1951 and 1952 respectively. In 1952, as compared with 1951, the tonnage treated shows an increase of 7,003 tons and the gold recovered an increase of 4,069 oz. The recovered grade in 1952 was 5.5 dwt. per ton, as against 5.23 dwt. in 1951.

Net gold proceeds at the official price of £15 9s. 10d. per oz. less realization charges show an increase of £66,416 and in addition the amount of £21,436 has been brought to account in respect of anticipated premium on gold sales. The actual amount which the company received as the premium on the gold deposited in the period November, 1951, to March, 1952, was £24,036. The increased revenue, however, was insufficient to offset the increase in operating expenditure, with the result that net profit for the year was down by £24,194.

Unappropriated profits of the old company at October 9, 1951, of £139,815 plus £385,559 profits previously appropriated as reserves for special development and depreciation now appear as a capital reserve of £525,374 in the accounts of the new company, which amount is represented by assets used in the business.

Dividend No. 1 of 6d. per unit of stock was paid on April 4, 1952, and the directors on August 29 declared a dividend No. 2 of 9d. per stock unit payable on October 10, 1952.

A NOTABLE YEAR

As you know, we have over many years, in association with our general managers, been endeavouring to increase our understanding of ore depositions in the Kalgoorlie district, and so suggest new areas for exploration. Kalgoorlie, with its intense mineralization and its high productivity has always appeared the most attractive district in Western Australia for work of this sort since, in addition to its productivity, the extensive exposures in mine workings provide data needed by the geologist.

As a result of these efforts Kalgoorlie Southern Gold Mines N.L. was formed to drill for a repetition of the Kalgoorlie field to the south of the productive area. At date only the Northern section of the extensive area of possible interest has been drilled, and the results to date give every encouragement for continuance.

A further consequence was the expectation that a second layer of quartz dolerite underlies the calc schist in the producing part of the field. If so, then this layer would be within mineable depth along the eastern side of the field, much of it within Gold Mines of Kalgoorlie's leases.

Drilling was begun some time ago and the first hole has now been completed at a depth of 3,367 ft. and has located the second layer of quartz dolerite. The drill-hole showed mineralization and strong shearing on the calc schist—lower quartz dolerite contact, extending some hundreds of feet into the calc schist and about 200 ft. into the quartz dolerite. This opens a new area for exploration in Kalgoorlie.

CONSISTENTLY HIGH GRADE OF ORE

The review by the geologists of the operating leases has also shed new light on the prospects in the upper part of the calc schist immediately below the out-cropping quartz dolerite, suggesting that the calc schist carries more ore than previously expected in its margins adjacent to the upper quartz dolerite. In consequence of these developments we can take a more optimistic view of our prospects of developing new ore in the upper part of the calc schist.

An important feature has been the consistently high grade of ore which we have been developing in these areas for some time past.

Since the close of the year 4,095 ft. of development have been completed, of which 1,211 ft. were in ore averaging 11.8 dwt. over 62 in.

The chairman then reviewed the principal developments and continued:

As with all Western Australian mines, costs increased during the year, the increase at Gold Mines of Kalgoorlie being approximately 18.3 per cent, and are still rising, consequent upon the rise in the basic wage rate.

The report was adopted.

KADUNA PROSPECTORS

The Thirty-Seventh Annual General Meeting of Kaduna Prospectors Ltd., was held in London, on Wednesday last.

Sir Godfrey Fell, K.C.I.E., C.S.I., O.B.E. (Chairman) presided.

The following is an extract from the Chairman's Review.

The output of tin concentrate of shipping grade during 1951 was 69 tons, of which 26 tons were obtained from known reserves and 43 tons from outside those reserves. The output for the preceding year was 84 tons.

During the year prospecting was continued but no substantial deposits of workable ground were discovered. In consequence the reserves have declined to 283 tons.

Sales of concentrate amounted to 66 tons and realized £48,997. Costs, including mining charges in Nigeria, London charges and Directors' remuneration, amounted to £32,688, leaving a balance of £16,309. To this there have been added £452 income from investments, £129 interest received and £176 miscellaneous receipts, making a total of £17,066. Expenditure during the year on prospecting on exclusive prospecting licences amounted to £605, and in connection with the issue of bonus shares, £204. After providing for profits tax, £5,700, and income tax, £5,076, there remains a net profit for the year of £5,481.

To this net profit there have been added £3,125, being the balance of unappropriated profits brought forward from the previous year, and £184, previous provision for taxation no longer required, giving a total available balance of £8,790.

Interim dividends of 8½ per cent and 25 per cent, both less income tax at 9s. 6d. in the £, have been paid, absorbing £5,250. The Directors do not recommend the payment of a final dividend.

You will see from the Report of the Directors that they have decided that the return of capital to shareholders, which they have had under consideration, should be no longer delayed. They therefore propose that a repayment of 1s. per 3s. share shall be made as soon as possible after the sanction of the Court has been obtained. Shareholders will be asked to pass the necessary resolutions at an Extraordinary General Meeting to be held immediately following the Annual General Meeting.

The output for the first six months of 1952 was 41½ tons as compared with 28 tons for the corresponding months last year.

The report and accounts were adopted, and at an Extraordinary General Meeting the proposals for the return of capital were approved.

KADUNA SYNDICATE

The Forty-First Annual General Meeting of the Kaduna Syndicate Ltd., was held in London, on Wednesday last.

Sir Godfrey Fell, K.C.I.E., C.S.I., O.B.E. (Chairman) presided.

The following is an extract from the Chairman's Review.

The 1951 output of tin concentrate of shipping grade was 258 tons, of which 167 tons were obtained from the known ore reserves and 91 tons from outside them. The output for the preceding year was 317 tons.

During the year prospecting was continued but did not disclose any large new deposits. Ore reserves, measured and indicated, at the end of the year amounted to 1,240 tons, as against 1,321 tons at the end of 1950.

Sales of concentrate amounted to 264 tons and realized £194,481. Costs, including mining charges in Nigeria, London charges and Directors' remuneration, amounted to £119,746, leaving a balance of £74,735. To this there have been added £3,406 income from investments, £480 interest received, £135 miscellaneous receipts and £149 proceeds of sale of an old vehicle, making a total of £78,905. Expenditure during the year on advance stripping amounted to £3,313, on prospecting on exclusive prospecting licences £1,457 and in connection with the issue of bonus shares, £353. After providing for profits tax, £26,500, and income tax, £22,500, there remains a net profit for the year of £24,782.

To this net profit there have been added £11,134, being the balance of unappropriated profits brought forward from the previous year, and £586, previous provision for taxation no longer required, giving a total available balance of £36,502.

Interim dividends of 16⅔ per cent and 33⅓ per cent, both less income tax at 9s. 6d. in the £, have been paid, absorbing £25,200. The Directors do not recommend the payment of a final dividend.

You will see from the Report of the Directors that they have decided that the return of capital to shareholders, which they have had under consideration for some time, should be no longer delayed. They therefore propose that a repayment of 1s. per 2s. share shall be made as soon as possible after the sanction of the Court has been obtained. Shareholders will be asked to pass the necessary resolutions at an Extraordinary General Meeting to be held immediately following the Annual General Meeting.

The output for the first six months of 1952 was 109 tons as compared with 124 tons for the corresponding months last year.

The report and accounts were adopted, and at an Extraordinary General Meeting the proposals for the return of capital were approved.

OMCOL
The Trade Mark of
THE OAKLAND GROUP

LEAD ORE

ANTIMONY ORE

OAKLAND METAL CO. LTD.
94 NEW BOND STREET,
LONDON, W.1

Telephone: GROSVENOR 5241/4
Cables: AMOMET, LONDON

Metal and Mineral Trades

Contractors for Ores · Concentrates · Residues
containing
LEAD
ZINC - COPPER - ANTIMONY - WOLFRAM

CREECHURCH HOUSE, LONDON, E.C.3
Telephone: AVENUE 5341
Cables: ORMINLAZ LONDON

LEOPOLD LAZARUS LTD

Offices at: SYDNEY, CALCUTTA and JOHANNESBURG

THE COMMERCIAL METAL COMPANY LTD
66 GRESHAM STREET, LONDON, E.C.2
ORES, METALS, ALLOYS, STEEL AND CHEMICALS
Telephone: MONARCH 0211 (8 lines) (Members of the London Metal Exchange) Cables: COMETALCO LONDON

MINING & CHEMICAL PRODUCTS, LTD.
MANFIELD HOUSE, 376, STRAND, W.C.2
Telephone: Temple Bar 6511/3
Telegrams: "MINCHEPRO, LONDON"
Works: ALPERTON, WEMBLEY, MIDDLESEX
Buyers of Silver Ores and Concentrates
Smelters and Refiners of
BISMUTH
ORES, RESIDUES & METAL
Manufacturers of:
FUSIBLE ALLOYS, SOLDER, WHITE METALS ANODES OF TIN, CADMIUM and ZINC IN ALL SHAPES
Importers and Distributors of:
ARSENIC · BISMUTH · CADMIUM INDIUM · SELENIUM · TELLURIUM THALLIUM

ROKKER & STANTON LTD.
DRAYTON HOUSE, GORDON STREET
LONDON, W.C.1
Metal Stockists & Shippers
for
BRASS, COPPER, ALUMINIUM AND NICKEL SILVER
in
Sheets, Rods, Tubes, Strip, Wire, etc.
Associated Companies in Holland and Belgium; also Regd. in South Africa and Rhodesia.
Tel: EUS 4751/2 Cables: BENTLY 2nd; A.B.C.6
Grams: ROKKER, WESTCENT, LONDON

EASTERN SMELTING CO. LTD.
CAPITAL—AUTHORISED £500,000: £435,000 ISSUED
Head Office: **ST. SWITHIN'S HOUSE, 11/12 ST. SWITHIN'S LANE, LONDON, E.C.4**
Telephone: MANsion House 2164/7 *Telegrams:* TIMAMASA, PHONE LONDON
TIN SMELTERS
BRANCHES THROUGHOUT THE MALAY STATES
Sole Selling Agents: **VIVIAN, YOUNGER & BOND, LIMITED, 8 BASINGHALL STREET, LONDON, E.C.2**
Telephone: MONarch 7221/7

ZINC SHAVINGS
GRANULATED & POWDERED
NON-FERROUS METALS

"Lead Wool" for Pipe-jointing.
Metallic Packing for Pumps, etc.

THE LEAD WOOL CO., LTD.
SNODLAND KENT
Telephone: Snodland 84216 & 7 Telegrams: "Strength, Phone, Snodland"

ROURA & FORGAS, LTD. *Telephone Nos:* **GERRARD 9641**

Sole Sterling Area Suppliers of

ITALIAN QUICKSILVER

COLQUHOUN HOUSE,
27/37 BROADWICK STREET, LONDON, W.1

EVERITT & Co. Ld. 40 CHAPEL STREET LIVERPOOL
Teleg. Address: Persistent, Liverpool Phone: 2996 Central
SPECIALITY
MANGANESE PEROXIDE ORES,
We are buyers of:—
WOLFRAM, SCHEELITE, MOLYBDENITE
VANADIUM, ILMENITE, RUTILE,
ZIRCONIUM and TANTALITE ORES
Suppliers of:—
FERRO-ALLOYS & METALS NON-FERROUS ALLOYS

MAYBANK METALS LTD.
This Company backed with the vast experience gained in a 100 YEARS of progressive trading, will expedite all orders . ..
THE BUYING OF MIXED OR SORTED NON-FERROUS SCRAP METALS and Supplying of Finely Graded Non-Ferrous Scrap to Your Requirements.
MAYBANK METALS LTD.
STAR WORKS, SPURGEON STREET, SOUTHWARK
LONDON, S.E.1 Telephone: HOP 2432/3
HOP 4212/3/4

WOLFRAM ORE
TIN ORE

FELIX KRAMARSKY CORPORATION
39 BROADWAY
NEW YORK 6, N. Y.
Cable Address: Orewolfram

ENTORES, LIMITED
KINGS HOUSE, 36 & 37 KING STREET,
LONDON, E.C.2

NON-FERROUS METALS
ORES · RESIDUES

Telegrams: Entores, Phone, London
Telephone: MONarch 3415

LEONARD COHEN LTD.

GOLD, SILVER AND THE PLATINUM METALS
ORES, CONCENTRATES AND RESIDUES
METAL HARDENERS
NON-FERROUS METAL INGOTS

London Office: 1 HAY HILL, W.1 *Telephone:* GROSVENOR 6284
Works: PORTH, GLAM *Telephone:* PORTH 280

International Smelters and Buyers of

SCRAP METALS AND RESIDUES

· SLAG · SKIMMINGS DROSSES SWEEPINGS · ASHES · BY-PRODUCTS

INTERNATIONAL SMELTERS LTD
Christchurch Road, London, S.W.19
Phone : Mitcham 2181 Wire : Intasmelta, Phone, London.

THE STRAITS TRADING
COMPANY LIMITED
Head Office:
P.O. Box 700, OCEAN BUILDING, SINGAPORE
Works:
SINGAPORE & PENANG
"The Straits Trading Co., Ltd."
Brand of Straits Tin

THE BRITISH TIN SMELTING
COMPANY, LIMITED
Works: LITHERLAND, LIVERPOOL
Smelters of Non-ferrous Residues and Scrap

London Agents:
W. E. MOULSDALE & CO., LTD.
2 Chantrey House, Eccleston Street, London, S.W.1
Cables: Wemoulsco, London Telephone: SLOane 7288/9

THE BRITISH METAL CORPORATION LTD
BMC

LONDON · MONTREAL · TORONTO · VANCOUVER
SYDNEY · PERTH · MELBOURNE
CALCUTTA · BOMBAY · KARACHI
JOHANNESBURG · BULAWAYO

ASSOCIATES :

C. TENNANT, SONS & CO. OF NEW YORK, NEW YORK
VIVIAN YOUNGER & BOND LIMITED, LONDON AND NIGERIA.
HENRY GARDNER & CO. LIMITED, LONDON, CANADA, CYPRUS AND MALAYA.

The Group trades in and markets non-ferrous ores, metals and minerals, many kinds of produce, timber and other materials; it provides coal-washing plant, ventilation plant and other specialist engineering equipment; and it furnishes allied shipping, insurance, secretarial, financial, technical and statistical services.

PRINCES HOUSE
93 GRESHAM STREET, LONDON, E.C.2

TELEGRAMS *Brimstacor, London* · CABLES: *Brimstacor, London* · TELEPHONE: *MONarch* 8055
Branches at BIRMINGHAM and SWANSEA

GEORGE T. HOLLOWAY Co. LTD.
Metallurgists & Assayers
ORE TESTING, WORKS AND METALLURGICAL RESEARCH LABORATORIES
Atlas Road, Victoria Road, Acton, LONDON, N.W.10
Telephone: ELGAR 5202 · *Grams and Cables:* NEOLITHIC LONDON

LEO RAPP LTD. — NON-FERROUS METALS
METAG LTD. — NON-FERROUS TUBES
LEO RAPP (Steel) LTD. — STEEL STOCKISTS
Buyers and Sellers
All at: 60a PURLEY AVENUE, LONDON, N.W.2
Telephone: GLAdstone 6393/4/5/6

LEAD

H. J. ENTHOVEN & SONS, LTD.
Smelters and Refiners
● ANTIMONIAL LEAD for the Battery Trade
● LEAD ALLOYS for the Cable Trade
● PRINTING METALS ● SOLDERS
City Office: 89 Upper Thames St., London, E.C.4.
Telephone: Mansion House 4533. Telegrams: Enthoven, Phone, London
Works: Rotherhithe, Croydon & Derbyshire

DEERING PRODUCTS LTD.
8 GREAT SMITH STREET, LONDON, S.W.1
ORES - MINERALS - REFRACTORY RAW MATERIALS
Telephone: ABBEY 2681/2 · Cables: PRODEERING, LONDON

CASH IN on Scrap and help close the $ GAP!

Best prices for Non-Ferrous metals, Residues, Scrap, Ores, etc.
ELTON, LEVY & CO. LTD.
1-4, St. ERMINS (West Side) CAXTON ST., LONDON, S.W.1
Telephone : ABBey 6582-3-4

Sell us
YOUR HIGH SPEED STEEL GRINDINGS
— for recovery in the form of Tungsten Bearing Metal. We offer good prices and are always willing to collect. We provide suitable containers on loan.
MAXWORTH METAL PRODUCTS LIMITED
Smelters and Refiners NORTON CANES, CANNOCK, STAFFS

PLATT METALS LTD.
METAL MANUFACTURERS and MERCHANTS
Buyers of
BRASS ROD SWARF AND SCRAP, and all descriptions of NON-FERROUS SCRAP METALS, BORINGS AND RESIDUES
Sellers of
BILLETS AND INGOTS TO ANY REQUIRED COMPOSITION, GRADED NON-FERROUS SCRAP METALS
METALEX WORKS, Great Cambridge Road, ENFIELD, Mddx.
Telephone: HOWard 3351 (5 lines) · Telegrams: Walton, Enfield

we buy
CONCENTRATES
ORES RESIDUES
containing
LEAD ZINC
COPPER

E. M. JACOB & CO. LTD.
HANOVER HOUSE. 73-78 HIGH HOLBORN.
LONDON. W.C.1
Telephone: CHAncery 3625 (5 lines) *Cables:* JACOMETA, LONDON

SMEE'S 3521

HENEAGE METALS
for Quality Ingots IN BRASS, GUN METAL & PHOSPHOR BRONZE.
PHONE ASTON CROSS 1177/8
HENEAGE METALS LTD. HENEAGE ST. BIRMINGHAM

ACLOQUE & CO.
A.I.D. & A.R.B Approved for
MECHANICAL TESTING, SAMPLING AND METALLURGICAL ANALYSIS
26 Bloomsbury Way, London, W.C.1 HOLborn 4487
Telegrams: Vanadium, Westcent, London *Cables;* Vanadium, London
Test House and Laboratories: GARTH ROAD, LOWER MORDEN, SURREY

We are Buyers of
TIN ORES AND CONCENTRATES
Offers and samples to:
SILTA S.p.A., Corso Matteotti, 9, Milano, Italy
Phones: 700696/701715 *Cables:* SILTAM, MILANO

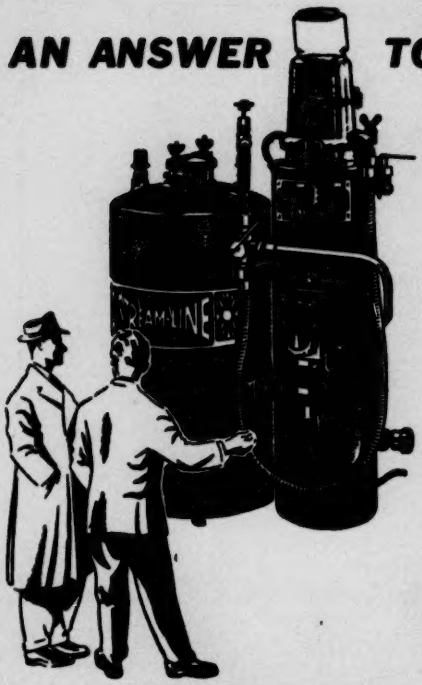
H. BARNETT LTD.
VICTOR ROAD, LONDON, N.7.
IMPORT : EXPORT
Phone: ARCHWAY 5461 (5 lines) Established *1865*
WE SPECIALISE IN ALL NON-FERROUS SCRAP AND INGOT METALS

THE ANGLO CHEMICAL & ORE CO., LTD.
PALMERSTON HOUSE · BISHOPSGATE · LONDON, E.C.2

Importers and Exporters
of
NON-FERROUS METALS - MINERALS - ORES
CHEMICALS - METALLIFEROUS RESIDUES AND SCRAP

Telephone: LONdon Wall 7255 (5 lines) Telegrams: CHEMORE, London

AN ANSWER TO RISING COSTS...



"Stream-Line filters enable us to use our first grade oil over and over again with a big saving in maintenance charges — increased running efficiency and longer periods between overhauls. 40,000 other users are proving every day the value of Stream-Line filters in the trouble-free operation of diesel engines."

STREAM-LINE FILTERS LTD
INGATE PLACE, LONDON, SW8
TELEPHONE MACAULAY 1011

CORE DRILLING
FOR MINERAL PROSPECTING

The advice and services of our skilled staff, operating with most modern equipment, are available for all your requirements in drilling for minerals.

Telephone:
ECCLES 2261-2-3

Telegrams:
THOM, PATRICROFT

HUWOOD

Conveyors for every output.

Head Office & Factories:
HUGH WOOD & CO. LTD., GATESHEAD - ON - TYNE 11.
Industrial & Export Office:
DASHWOOD HOUSE, 69, OLD BROAD STREET, LONDON, E.C.2.
TELEPHONE: LONDON WALL 6631-2-3 TELEGRAMS: HUWOOD, AVE, LONDON.

Published by The Mining Journal Ltd., 15 George St., London, E.C.4, and printed by Samuel Sidders & Son Ltd., 115 Salusbury Road, London, N.W.6.
Registered as a Newspaper.